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

2903153

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

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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/5 A

## Product Description

TRIO POWER power supplies with standard functionality
The TRIO POWER power supply range with push-in connection has been perfected for use in machine building. All functions and the space-saving design of the single and three-phase modules are optimally tailored to the stringent requirements. Under challenging ambient conditions, the power supply units, which feature an extremely robust electrical and mechanical design, ensure the reliable supply of all loads.

## Your advantages

- Save time and costs, thanks to the Push-in connection and narrow design
- Increase system availability, thanks to dynamic boost with 150% of the nominal current for five seconds
- Maximum flexibility due to the wide temperature range from -25°C to +70°C and device startup at -40°C
- Rugged design

## Commercial Data

| | |
|---|---|
| Item number | 2903153 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | C14 |
| Product Key | CMPO33 |
| Catalog Page | Page 258 (C-4-2019) |
| GTIN | 4046356960946 |
| Weight per Piece (including packing) | 570.1 g |
| Weight per Piece (excluding packing) | 568.5 g |
| Customs tariff number | 85044030 |
| Country of origin | CN |

# Technical Data

## Input data

AC operation

| | |
|---|---|
| Network type | Star network |
| Nominal input voltage range | 3x 400 V AC ... 500 V AC |
| | 2x 400 V AC ... 500 V AC |
| Input voltage range | 3x 400 V AC ... 500 V AC -20 % ... +15 % |
| | 2x 400 V AC ... 500 V AC -10 % ... +15 % |
| Input voltage range AC | 3x 320 V AC ... 575 V AC |
| Typical national grid voltage | 3x 400 V AC |
| | 3x 480 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | ≤ 22 A (typical) |
| Inrush current integral ($I^2t$) | ≤ 0.25 $A^2s$ |
| AC frequency range | 50 Hz ... 60 Hz |
| Mains buffering time | typ. 20 ms (400 V AC) |
| | typ. 20 ms (500 V AC) |
| Current consumption | 3x 0.4 A (400 V AC) |
| | 3x 0.3 A (500 V AC) |
| | 2x 0.6 A (400 V AC) |
| | 2x 0.5 A (500 V AC) |
| Nominal power consumption | 243.6 VA |
| Protective circuit | Transient surge protection; Varistor |
| Power factor (cos phi) | 0.55 |
| Typical response time | < 1 s |
| Input fuse | 3.15 A (internal (device protection), slow-blow) |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |
| Discharge current to PE | < 0.25 mA |
| | < (550 V AC, 60 Hz) |

## Output data

| | |
|---|---|
| Efficiency | > 91 % (at 400 V AC and nominal values) |
| Output characteristic | U/I with dynamic load reserve |
| Nominal output voltage | 24 V DC ±1 % |
| Setting range of the output voltage ($U_{Set}$) | 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted) |
| Nominal output current ($I_N$) | 5 A |
| Dynamic Boost ($I_{Dyn.Boost}$) | 7.5 A (5 s) |
| Derating | > 60 °C ... 70 °C (2.5%/K) |
| Protection against overvoltage at the output (OVP) | ≤ 30 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| | < 3 % (Dynamic load change 10 % ... 90 %, 10 Hz) |
| | < 0.1 % (change in input voltage ±10 %) |

| | |
|---|---|
| Residual ripple | ≤ 20 $mV_{PP}$ |
| Short-circuit-proof | yes |
| No-load proof | yes |
| Output power | 120 W |
| | 180 W |
| Maximum no-load power dissipation | < 1 W (400 V AC) |
| Power loss nominal load max. | < 12 W (480 V AC) |
| Rise time | ≤ 120 ms ($U_{OUT}$ (10 % ... 90 %)) |
| Connection in parallel | yes, for redundancy and increased capacity |
| Connection in series | yes |

Signal: DC OK

| | |
|---|---|
| Continuous load current | 100 mA |

Signal relay 13/14

| | |
|---|---|
| Default | closed |
| Digital | 30 V AC 30 V DC 100 mA |

## Connection data

Input

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross section solid min. | 0.2 mm² |
| Conductor cross section solid max. | 4 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.2 mm² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 10 mm |

Output

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross section solid min. | 0.2 mm² |
| Conductor cross section solid max. | 4 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.2 mm² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 10 mm |

Signal

| | |
|---|---|
| Connection method | Push-in connection |

| | |
|---|---|
| Conductor cross section solid min. | 0.2 mm² |
| Conductor cross section solid max. | 1.5 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 1.5 mm² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.2 mm² |
| Single conductor/terminal point, stranded, with ferrule, max. | 1.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 16 |
| Stripping length | 8 mm |

## LED signaling

| | |
|---|---|
| Types of signaling | LED |
| | Floating signal contact |

Signal output: LED status indicator

| | |
|---|---|
| Signalization designation | DC OK |
| Status display | LED |
| Color | green |

## Electrical properties

| | |
|---|---|
| Number of phases | 3.00 |
| Insulation voltage input/output | 3 kV AC (type test) |
| | 1.5 kV AC (routine test) |

## Product properties

| | |
|---|---|
| Product type | Power supply |
| MTBF (IEC 61709, SN 29500) | > 2300000 h (25 °C) |
| | > 1300000 h (40 °C) |
| | > 620000 h (60 °C) |

Insulation characteristics

| | |
|---|---|
| Protection class | II (in closed control cabinet) |
| Degree of pollution | 2 |

## Dimensions

| | |
|---|---|
| Width | 35 mm |
| Height | 130 mm |
| Depth | 115 mm |

Installation dimensions

| | |
|---|---|
| Installation distance right/left | 0 mm / 0 mm |
| Installation distance top/bottom | 50 mm / 50 mm |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically |

| | |
|---|---|
| | 50 mm |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |
| With protective coating | No |

## Material specifications

| | |
|---|---|
| Inflammability class in acc. with UL 94 (housing / terminal blocks) | V0 |
| Housing material | Plastic |
| Type of housing | Polycarbonate |
| Hood version | Polycarbonate |

## 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) | -25 °C |
| Maximum altitude | ≤ 5000 m (> 2000 m, Derating: 10 %/1000 m) |
| Climatic class | 3K3 (in acc. with EN 60721) |
| 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, 4g, 90 min. |

## Standards and regulations

| | |
|---|---|
| Rail applications | EN 50121-4 |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV) |
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | IEC 62368-1 (SELV) |
| Standard – Safety extra-low voltage | IEC 62368-1 (SELV) und EN 60204-1 (PELV) |
| Standard - Safe isolation | DIN VDE 0100-410 |
| Standard - Safety of transformers | EN 61558-2-16 (air clearances and creepage distances only) |

## Approval data

| | |
|---|---|
| UL approvals | UL Listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |

Conformity/Approvals

| | |
|---|---|
| SIL in accordance with IEC 61508 | 0 |

## EMC data

| | |
|---|---|
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| 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 |
| Conducted noise emission | EN 55016 |
| | EN 61000-6-3 (Class B) |
| Interference emission | Noise emission according to EN 61000-6-2 (industrial) |
| Noise emission | EN 55011 (EN 55022) |
| Noise immunity | Immunity according to EN 61000-6-2 (industrial) |

Electrostatic discharge

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

Electrostatic discharge

| | |
|---|---|
| Contact discharge | 6 kV (Test Level 4) |
| Discharge in air | 8 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 | 10 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 | 1 kV (Test Level 2 - asymmetrical) |
| Comments | Criterion A |

Surge voltage load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |
| Input | 3 kV (Test Level 3 - symmetrical) |
| | 6 kV (Test Level 4 - asymmetrical) |
| Output | 1 kV (Test Level 2 - symmetrical) |
| | 2 kV (Test Level 1 - asymmetrical) |
| Signal | 1 kV (Test Level 1 - symmetrical) |
| Comments | Criterion B |

Conducted interference

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

Conducted interference

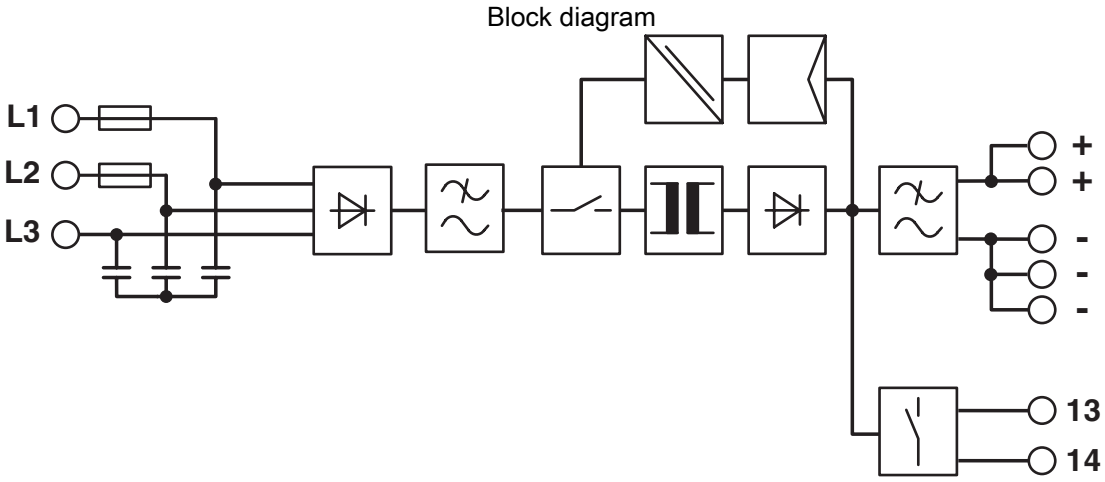
| | |
|---|---|
| Input/Output | asymmetrical |
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V (Test Level 3) |

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 |
| 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

**cUL Recognized**
Approval ID: FILE E 211944

**UL Recognized**
Approval ID: FILE E 211944

**IECEE CB Scheme**
Approval ID: DK-44785-A1-M1-UL

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

**DNV GL**
Approval ID: TAA00000BM

**UL Listed**
Approval ID: FILE E 123528

**cUL Listed**
Approval ID: FILE E 123528

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

**cUL Listed**
Approval ID: FILE E 199827

**UL Listed**
Approval ID: FILE E 199827

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## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-9.0 | 27040701 |
| ECLASS-10.0.1 | 27040701 |
| ECLASS-11.0 | 27040701 |

### ETIM

| | |
|---|---|
| ETIM 8.0 | EC002540 |

### UNSPSC

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

## Environmental Product Compliance

| | |
|---|---|
| REACh SVHC | Lead 7439-92-1 |

| | |
|---|---|
| China RoHS | Environmentally Friendly Use Period = 25; |
| | For information on hazardous substances, refer to the manufacturer’s declaration available under “Downloads” |

## Accessories

### Electronic circuit breaker

Electronic circuit breaker - CBM E4 24DC/0.5-10A NO-R - 2905743

https://www.phoenixcontact.com/us/products/2905743

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

### Electronic circuit breaker

Electronic circuit breaker - CBM E8 24DC/0.5-10A NO-R - 2905744

https://www.phoenixcontact.com/us/products/2905744

Multi-channel, electronic circuit breaker with active current limitation for protecting eight loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.

## Potential distributors

Potential distributors - VIP-2/SC/PDM-2/24 - 2315269

https://www.phoenixcontact.com/us/products/2315269

VARIOFACE module, with two equipotential busbars (P1, P2) for potential distribution, for mounting on NS 35 rails. Module width: 70.4 mm

## Potential distributors

Potential distributors - VIP-3/PT/PDM-2/24 - 2903798

https://www.phoenixcontact.com/us/products/2903798

VARIOFACE module with push-in connection and two equipotential busbars (P1, P2) for potential distribution, for mounting on NS 35 rails. Module width: 57.1 mm

## Electronic circuit breaker

Electronic circuit breaker - CBMC E4 24DC/1-4A NO - 2906031

https://www.phoenixcontact.com/us/products/2906031

Multi-channel electronic circuit breaker 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.

## Electronic circuit breaker

Electronic circuit breaker - CBMC E4 24DC/1-10A NO - 2906032

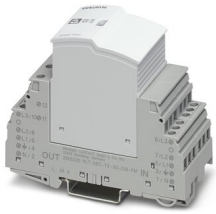
https://www.phoenixcontact.com/us/products/2906032

Multi-channel electronic circuit breaker 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.

## Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-3S-230-FM - 2905230

https://www.phoenixcontact.com/us/products/2905230



Plug-in device protection, according to type 3/class III, for 3-phase power supply networks with separate N and PE (5-conductor system: L1, L2, L3, N, PE), with integrated surge-proof fuse and remote indication contact.

## Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-24-FM-PT - 2907925

https://www.phoenixcontact.com/us/products/2907925

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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