

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



2866381

<https://www.phoenixcontact.com/nl/products/2866381>

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Primary-switched TRIO POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/20 A

## Product description

TRIO POWER power supplies with standard functionality

TRIO POWER is particularly suited to standard machine production, thanks to 1- and 3-phase versions up to 960 W. The wide-range input and the international approval package enable worldwide use.

The robust metal housing, the high electric strength, and the wide temperature range ensure a high level of power supply reliability.

## Your advantages

- Use the third negative terminal block as a grounding terminal block and minimize installation costs
- Rugged design with metal housing and wide temperature range from -25 to +70°C
- Maximum operational reliability thanks to high MTBF (mean time between failures) of more than 500,000 hours and high dielectric strength of up to 300 V AC
- Compensation of voltage drops by means of output voltage that can be adjusted on the front

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2866381       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CMPT13        |
| Product key                          | CMPT13        |
| GTIN                                 | 4046356046664 |
| Weight per piece (including packing) | 2.354 g       |
| Weight per piece (excluding packing) | 2.084 g       |
| Customs tariff number                | 85044095      |
| Country of origin                    | CN            |

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## Technical data

### Input data

#### AC operation

|                                          |                                                    |
|------------------------------------------|----------------------------------------------------|
| Nominal input voltage range              | 100 V AC ... 240 V AC                              |
| Input voltage range                      | 85 V AC ... 264 V AC (Derating < 90 V AC: 2,5 %/V) |
| Derating                                 | < 90 V AC (2.5 %/V)                                |
| Input voltage range AC                   | 85 V AC ... 264 V AC (Derating < 90 V AC: 2,5 %/V) |
| Electric strength, max.                  | 300 V AC                                           |
| Voltage type of supply voltage           | AC                                                 |
| Inrush current                           | < 15 A                                             |
| Inrush current integral ( $I^2t$ )       | 1.4 A <sup>2</sup> s                               |
| AC frequency range                       | 45 Hz ... 65 Hz                                    |
| Mains buffering time                     | > 13 ms (120 V AC)<br>> 13 ms (230 V AC)           |
| Current consumption                      | 4.6 A (120 V AC)<br>2.4 A (230 V AC)               |
| Nominal power consumption                | 533 VA                                             |
| Protective circuit                       | Transient surge protection; Varistor               |
| Power factor (cos phi)                   | 0.99                                               |
| Typical response time                    | < 1 s                                              |
| Input fuse                               | 10 A (slow-blow, internal)                         |
| Permissible backup fuse                  | B16                                                |
| Recommended breaker for input protection | 16 A (Characteristics B, C, D, K)                  |
| Discharge current to PE                  | < 3.5 mA                                           |

### Output data

|                                                    |                                                                                                                                               |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency                                         | 91 % (for 230 V AC and nominal values)                                                                                                        |
| Output characteristic                              | U/I                                                                                                                                           |
| Nominal output voltage                             | 24 V DC $\pm$ 1 %                                                                                                                             |
| Setting range of the output voltage ( $U_{Set}$ )  | 22.5 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)                                                                             |
| Nominal output current ( $I_N$ )                   | 20 A ( $U_{OUT}$ = 24 V DC)                                                                                                                   |
| Derating                                           | 55 °C ... 70 °C (2.5 %/K)                                                                                                                     |
| Feedback voltage resistance                        | 35 V DC                                                                                                                                       |
| Protection against overvoltage at the output (OVP) | < 35 V DC                                                                                                                                     |
| Max. capacitive load                               | unlimited                                                                                                                                     |
| Active current limitation                          | Approx. 25 A (for short-circuit)                                                                                                              |
| Control deviation                                  | < 1 % (change in load, static 10 % ... 90 %)<br>< 2 % (change in load, dynamic 10 % ... 90 %)<br>< 0.1 % (change in input voltage $\pm$ 10 %) |
| Residual ripple                                    | < 10 mV <sub>PP</sub>                                                                                                                         |
| Output power                                       | 480 W                                                                                                                                         |
| Peak switching voltages nominal load               | < 80 mV <sub>PP</sub>                                                                                                                         |

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|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| Maximum no-load power dissipation | 4 W                                        |
| Power loss nominal load max.      | 46 W                                       |
| Rise time                         | < 2 ms ( $U_{OUT}$ (10 % ... 90 %))        |
| Connection in parallel            | yes, for redundancy and increased capacity |
| Connection in series              | yes                                        |

## Connection data

### Input

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross-section, rigid min.   | 0.2 mm <sup>2</sup> |
| Conductor cross-section, rigid 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> |
| Conductor cross-section AWG min.      | 24                  |
| Conductor cross-section AWG max.      | 14                  |
| Stripping length                      | 9 mm                |
| Screw thread                          | M2,5                |
| Tightening torque, min                | 0.4 Nm              |
| Tightening torque max                 | 0.5 Nm              |

### Output

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross-section, rigid min.   | 0.5 mm <sup>2</sup> |
| Conductor cross-section, rigid max.   | 6 mm <sup>2</sup>   |
| Conductor cross-section flexible min. | 0.5 mm <sup>2</sup> |
| Conductor cross-section flexible max. | 4 mm <sup>2</sup>   |
| Conductor cross-section AWG min.      | 20                  |
| Conductor cross-section AWG max.      | 10                  |
| Stripping length                      | 14 mm               |
| Screw thread                          | M3                  |
| Tightening torque, min                | 0.5 Nm              |
| Tightening torque max                 | 0.6 Nm              |

## Signaling

|                           |           |
|---------------------------|-----------|
| Types of signaling        | LED       |
| Operating voltage display | Green LED |

### Signal output

|                        |                                   |
|------------------------|-----------------------------------|
| Status display         | "DC OK" LED green                 |
| Note on status display | $U_{OUT} > 21.5$ V: LED lights up |

## Electrical properties

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

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|                                            |                        |
|--------------------------------------------|------------------------|
| Insulation voltage input/output            | 2 kV (routine test)    |
| Insulation voltage input / PE              | 2 kV AC (type test)    |
|                                            | 2 kV AC (routine test) |
| Insulation voltage input, output / housing | 4 kV (type test)       |

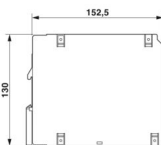
## Product properties

|                            |            |
|----------------------------|------------|
| Product family             | TRIO POWER |
| MTBF (IEC 61709, SN 29500) | > 915000 h |

## Insulation characteristics

|                      |                        |
|----------------------|------------------------|
| Protection class     | I (with PE connection) |
| Overvoltage category | III                    |
| Degree of pollution  | 2                      |

## Dimensions

|                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|
| Dimensional drawing |  |
| Width               | 115 mm                                                                              |
| Height              | 130 mm                                                                              |
| Depth               | 152.5 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 note           | alignable: horizontally 0 mm, vertically 50 mm |
| Mounting position       | horizontal DIN rail NS 35, EN 60715            |
| With protective coating | no                                             |

## Material specifications

|                      |                          |
|----------------------|--------------------------|
| Housing material     | Metal                    |
| Type of housing      | Steel sheet, zinc-plated |
| Side element version | Aluminum                 |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                                              |
|-----------------------------------------|----------------------------------------------|
| Degree of protection                    | IP20                                         |
| Ambient temperature (operation)         | -25 °C ... 70 °C (> 55° C derating : 2.5%/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C                             |
| Climatic class                          | 3K3 (in acc. with EN 60721)                  |

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|                                                |                                                                                            |
|------------------------------------------------|--------------------------------------------------------------------------------------------|
| 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)<br>15 Hz ... 150 Hz, 2.3g, 90 min. |

## Standards and regulations

|                                                                                                                                  |                                      |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 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                                                                                                     | EN 60950-1/VDE 0805 (SELV)           |
| Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment               | EN 50178                             |
| Standard – Safety extra-low voltage                                                                                              | EN 60950-1 (SELV)<br>EN 60204 (PELV) |
| Standard - Safe isolation                                                                                                        | DIN VDE 0100-410                     |

## Approvals

|              |                                                        |
|--------------|--------------------------------------------------------|
| UL approvals | UL/C-UL listed UL 508<br>UL/C-UL Recognized UL 60950-1 |
|--------------|--------------------------------------------------------|

## Conformity/Approvals

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

## 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<br>EN 61000-6-4                      |
| EMC requirements for noise immunity | EN 61000-6-1<br>EN 61000-6-2                      |

## Electrostatic discharge

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

## Electrostatic discharge

|                   |                     |
|-------------------|---------------------|
| Contact discharge | 8 kV (Test Level 4) |
| Discharge in air  | 8 kV (Test Level 3) |
| 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           |
| Frequency range     | 1 GHz ... 2 GHz  |

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|                     |                 |
|---------------------|-----------------|
| Test field strength | 10 V/m          |
| Frequency range     | 2 GHz ... 3 GHz |
| Test field strength | 10 V/m          |
| Comments            | Criterion A     |

## Fast transients (burst)

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

## Fast transients (burst)

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

## Conducted interference

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

## Conducted interference

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

## Conducted interference

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

## Voltage dips

|                       |               |
|-----------------------|---------------|
| Standards/regulations | EN 61000-4-11 |
|-----------------------|---------------|

## 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 |

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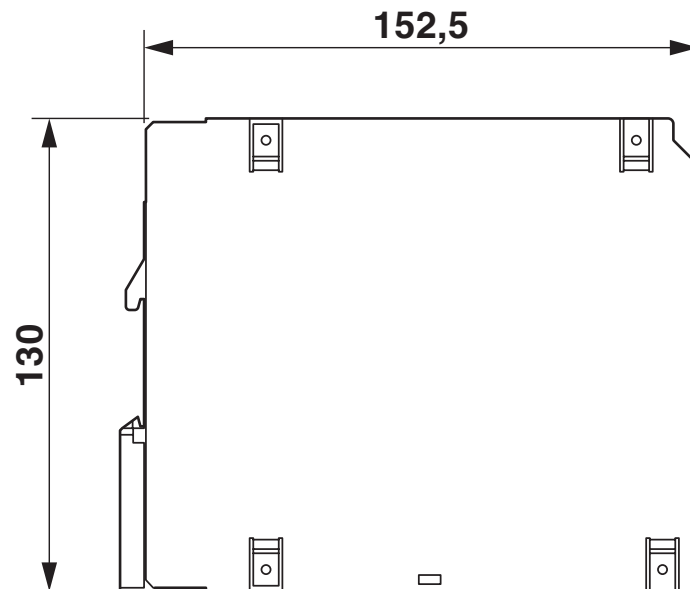
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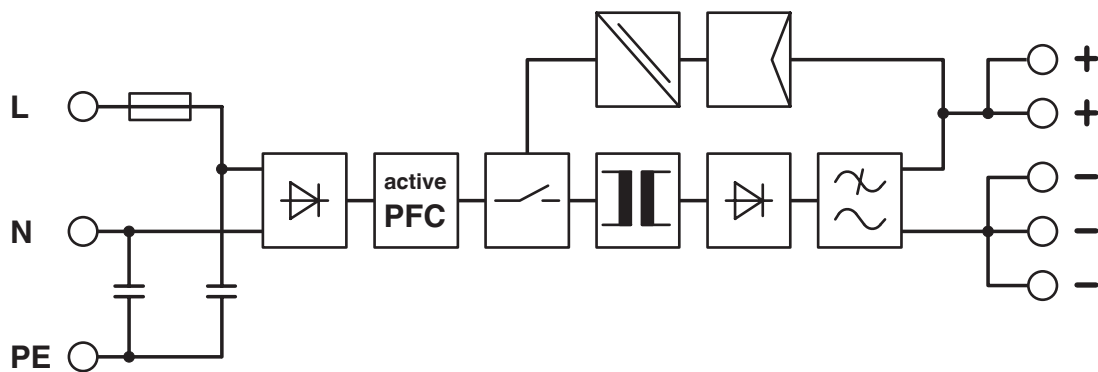


## Drawings

Dimensional drawing



Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/nl/products/2866381>



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



**UL Recognized**  
Approval ID: E211944



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



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



**UL Listed**  
Approval ID: E123528



**cUL Listed**  
Approval ID: E123528

**CoC / Compliance Statement**  
Approval ID: 17-103-00



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## 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                               | 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(CAS: 7439-92-1)                 |
| SCIP                                | 5c3d8776-7484-449d-96ce-5d5a20f5b749 |

### EF3.1 Climate Change

|         |                |
|---------|----------------|
| CO2e kg | 58,158 kg CO2e |
|---------|----------------|