QUINT-PS-100-240AC/24DC/40

Power supply unit

INTERFACE

Data sheet 102315_en_02

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1 Description

QUINT POWER power supply units for plant and special engineering reliably start heavy loads with high inrush currents using the POWER BOOST. Thanks to the widerange input and extensive package of approvals, they can be used in all sectors of industry the world over. The switching output or floating relay contact are used for remote diagnostics.

Features

- Universal power supply unit with an extensive product range, including special versions and accessories
- Can be used worldwide in all industrial sectors due to a wide-range input and an international approval package
- High level of operational reliability thanks to high MTBF
 > 500,000 h, long mains buffering times > 20 ms
- Reliable starting of heavy loads with high inrush currents through the POWER BOOST power reserve
- Active function monitoring through switching output and preventive function monitoring through floating relay contact for remote diagnosis
- Parallel connection possible for increased performance and redundancy

DANGER OF EXPLOSION!

Only remove equipment when it is disconnected and not in the potentially explosive area.

DANGER

Components with dangerously high voltage and high stored energy are located in the device! Never carry out work on live parts! Depending on the ambient temperature and the load, the housing can become very hot!

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Make sure you always use the latest documentation. It can be downloaded from the product at <u>www.phoenixcontact.net/catalog</u>.





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3 Ordering data

| Description | Туре | Order No. | Pcs. / Pkt. |
|--|----------------------------|-----------|-------------|
| DIN rail power supply unit 24 V DC/40 A, primary switched-mode, 1-phase. | QUINT-PS-100-240AC/24DC/40 | 2938879 | 1 |
| Annanying | T | | |
| Accessories | Туре | Order No. | Pcs. / Pkt. |

4 Technical data

| Input data | |
|--|---|
| Input nominal voltage range | 110 V AC 240 V AC |
| AC input voltage range | 85 V AC 264 V AC (Derating < 100 V DC: 2.5%/V) |
| DC input voltage range | 90 V DC 350 V DC (Derating < 110 V DC: 2.5%/V) |
| AC frequency range | 45 Hz 65 Hz |
| DC frequency range | 0 Hz |
| Current consumption | Approx. 12.5 A (120 V AC) Approx. 4.5 A (230 V AC) |
| Inrush current limitation | < 15 A (typical) |
| l ² t | < 3.2 A ² s |
| Power failure bypass | > 20 ms (120 V AC) > 20 ms (230 V AC) |
| Typical response time | <1s |
| Protective circuitry | Transient surge protection Varistor |
| Input fuse, integrated | 20 A (fast blow, internal) |
| Recommended backup fuse for mains protection | 16 A (characteristic B) 20 A (characteristic B) |
| Output data | |
| Nominal output voltage | 24 V DC ±1% |
| Setting range of the output voltage | 22.5 V DC 29.5 V DC (> 24 V constant capacity) |
| Output current | 40 A (-25 °C 60 °C) 45 A (with POWER BOOST, -25°C 40°C permanent) |
| Derating | From +60°C to 70°C: 2.5% per Kelvin |
| Current limitation | Approx. I _{BOOST} = 45 A (for short circuit) |
| Max. capacitive load | Unlimited |
| Control deviation | < 1 % (change in load, static 10% 90%) < 2 % (change in load, dynamic 10% 90%) < 0.1 % (change in input voltage ±10%) |
| Efficiency | > 92 % (for 230 V AC and nominal values) |
| Ascent time | < 2 ms (U _{OUT} (10% 90%)) |
| Residual ripple | < 30 mV _{PP} (with nominal values) |
| Peak switching voltages | < 50 mV _{PP} (20 MHz) |
| Connection in parallel | Yes, for redundancy and increased capacity |
| Connection in series | Yes |
| Surge protection against internal surge voltages | Yes, limited to approx. 35 V DC |
| Resistance to reverse feed | 35 V DC |
| Power consumption | |
| Maximum power dissipation idling | 28 W |
| Power loss nominal load max. | 80 W |

| Output descriptionUpp 0 0 x U _k : High signalVoltage24 VCurrent20 Ma (dotral treatistant)State displayTC CK: LED green / U _{QUT} < 0.9 x U _k : ED flashingDC KC: LED green / U _{QUT} < 0.9 x U _k : Contact closedOutput descriptionRelay contact, U _{QUT} < 0.9 x U _k : Contact closedVoltage< 30 V AC/DCCurrent< 14 CStates displayCOCK: LED green / UCKPrevent data< 14 CInsulation voltage input/output< 30 V AC/DCInsulation voltage input/outputSi VA C (voltante test)Insulation voltage output / PESi VA C (voltante test)Insulation voltage output / PENuNex (AlMQ1)Insulation voltage output / | DC OK active | |
|---|--|--|
| Velage< 24 VCurrent< 20 mA (shot circuit resistant) | Output description | U _{OUT} > 0.9 x U _N : High signal |
| Status display DC OK' LED green / U _{QUT} < 0.9 × U _A : LED flashing Diput description Relay contact, U _{QUT} < 0.9 × U _A : Contact closed Voltage S0 V AC/OC Current s 1 A Status display To COLLED green / Cerrent data SV AC (type test) status display Insulation voltage input/PE S0V VC (type test) status display Insulation voltage input / PE S00 V DC (routine test) Insulation voltage output / PE S00 V DC (routine test) Degree of protection IP20 Class of protection IP20 Type of housing AuXox (AMg1) Dimensions W / H / D (state of delivery) 20 rom / 130 rmn / 25 rmn Dimensions W / H / D (state of delivery) 25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) 25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) 25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) 45 °C 80 °C | Voltage | |
| DC OK floating Output description Relay contact, U _{QUT} > 0.9 x U _V : Contact closed Voltage 230 V AC (DC Current 31 A Status display DC OK' LED green / Centert 31 A Status display DC OK' LED green / Centert data StV AC (type test) Insulation voltage input/output 3 V/AC (type test) Insulation voltage input/PE 3 V/AC (type test) Display of protection P80 Diagee of protection L with PE connection MTBF >5000 000 In acc. with EC 81709 (SN 29500) Dimensions W /H /D (status of delivery) 240 mm / 130 mm / 125 mm Dimensions W /H /D (status of delivery) 240 mm / 130 mm / 125 mm Dimensions W /H /D (status of delivery) 240 mm / 130 mm / 125 mm Dimensions W /H /D (status of delivery) 240 mm / 130 mm / 125 mm Dimensions W /H /D (status of delivery) 25 °C - 0 °C (> 0 °C denating) Ambient conditions -55 °C - 0 °C (> 0 °C denating) Ambient stomperature (storagetransport) 40 °C - 85 °C Stok 30 gn all directions in acc. with EC 60088-2-81 | Current | ≤ 20 mA (short circuit resistant) |
| Duput descriptionRelay contact Upury > 0.9 x Upi, Contact closedVoltage> 1.4 AYatas display> 10 CM* LED green /Description> 10 CM* LED green /Insulation voltage input/orbut> 10 XAC (type test) SVAC (type test) SVAC (type test) SVAC (type test) SVAC (type test) SVAC (type test) SVAC (type test) | Status display | "DC OK" LED green / $\rm U_{OUT}$ < 0.9 x $\rm U_{N}$: LED flashing |
| Voitage ≤ 80 V AC/DC Current ≤ 1 A Status display 'TC GK' LED green / General data SV AC (type test) Insulation voltage input/OE SV AC (type test) Insulation voltage output / PE 3 kV AC (type test) Insulation voltage output / PE 3 kV AC (type test) Insulation voltage output / PE 500 V DC (routine test) Degree of protection IP20 Class of protection IP20 Dimensions W // JO (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W // JO (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W // JO (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W // JO (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W // JO (state of delivery) 25 'C 70 'C (> 60 'C derating) Arbient temperature (operation) -85 'C Arbient temperature (operation) -95 'C 70 'C (> 60 'C derating) Arbient temperature (operation) 40 'C 85 'C Arbient temperature (operation) 55 'C 70 'C (> 60 'C derating) Arbient temperature (operation) 55 'C 70 'C (> 60 'C derating) | DC OK floating | |
| VoitageS0 VAC/DCCurrentS1 ACurrentS1 AStatus display"DC CK' LED green /General datSV AC (type test)Insulation voltage input/ VESV AC (type test)Insulation voltage output / PES0 VD C (vourine test)Insulation voltage output / PES0 VD C (vourine test)Degree of protectionIP20Class of protectionIP20Dimensions W // JD (state of delivery)S00 VD C (vourine test)Dimensions W // JD (state of delivery)240 mm / 130 mm / 125 mmDimensions W // JD (state of delivery)240 mm / 130 mm / 125 mmDimensions W // JD (state of delivery)240 mm / 130 mm / 125 mmDimensions W // JD (state of delivery)25 °C 70 °C (> 60 °C derating)Ambient temperature (operation)<25 °C 70 °C (> 60 °C derating)Ambient temperature (operation)<25 °C 70 °C (> 60 °C derating)Ambient temperature (operation)<25 °C 70 °C (> 60 °C derating)Ambient temperature (operation)<25 °C 70 °C (> 60 °C derating)Ambient temperature (operation)<25 °C 70 °C (> 60 °C derating)Stock30 gi nal il directions in acc. with EC 60068-2-87Pollution degree in acc. with EN 50178Electrical safety (of information technology equipment)El N60204 / Surge voltage category IIIStock30 gi nal il directions in acc. with EC 60068-2-87Electrical safety (of information technology equipment)El N60204 / Surge voltage category IIIElectrical safety (of information technology equipmentEl N60204 / Su | Output description | Relay contact, $U_{OUT} > 0.9 \times U_N$: Contact closed |
| Status display 'DC OK' LED green / General data Insulation voltage input/output 3K VAC (type test) Insulation voltage input/PE 3K VAC (type test) Insulation voltage output / PE 50V VDC (voltine test) Insulation voltage output / PE 50V VDC (voltine test) Degree of protection IP20 Class of protection IP20 Class of protection Vit // PC ontenction Type of housing AluNox (AMg1) Dimensions W // H // State of delivery) 240 mm / 130 mm / 243 mm Dimensions W // H // D (90' furned) 12 zmm / 130 mm / 243 mm Dimensions W // H // D (90' furned) 12 zmm / 130 mm / 243 mm Weight 35 kg Ambient temperature (poreation) 25 °C 70 °C (> 60 °C derating) Arbient temperature (poreation) 40 °C 85 °C Max, permissible relative humidity (operation) 55 % (28 °C, no condensation) Vibration (operation) 25 °C 70 °C (> 60 °C derating) Shock 30g in all directions in acc. with IEC 60088-2-67 Stok 30g in all directions in acc. with IEC 60088-2-67 Stok 30g in all directions in acc. with IEC 60088-2-67 Shock 30g in all directions in acc. with IEC 60088-2-67 Stok Stok Stok Stok Stok Sto | Voltage | |
| Check Control Insulation voltage input/output 3 kV AC (type test) 2 kV AC (routine test) Insulation voltage input/PE 3 kV AC (type test) 1.5 kV AC (routine test) Insulation voltage output/PE 500 VD C (routine test) Degree of protection IP20 Class of protection I, with PE connection Type of housing AuNox (AMq1) Dimensions W/ H / D (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W/ H / D (state of delivery) 240 rm / 130 rm / 125 rm Dimensions W/ H / D (state of delivery) 240 rm / 130 rm / 243 rm Weight 3.5 kg Ambient temperature (operation) -25 rC 70 °C (> 60 °C derating) Ambient temperature (operation) -25 rC 70 °C (> 60 °C derating) Ambient temperature (operation) -25 rC 70 °C (> 60 °C derating) Ambient temperature (operation) -25 rC 70 °C (> 60 °C derating) Ambient temperature (operation) -25 rC 70 °C (> 60 °C derating) Stock 30g in all directions in acc. with IEC 60068-2-27 Pollution (operation) 15 Fz 70 °C (> 60 °C derating) Stock 30g in all directions in acc. with IEC 60068-2-27 <tr< td=""><td>Current</td><td>≤1A</td></tr<> | Current | ≤1A |
| Insulation voltage input/output 3 kV AC (type test) 2 kV AC (routine test) Insulation voltage input/ PE 3 kV AC (type test) 1 s.kV AC (routine test) Insulation voltage output / PE 500 V DC (routine test) Degree of protection IP20 Class of protection IP20 Class of protection I, with PE connection MTBF > 500 000 h in acc. with IEC 61709 (SN 29500) Type of housing Aukox (AM(41) Dimensions W / H / D (state of delivery) 240 rm / 130 mm / 125 rm Dimensions W / H / D (90° turned) 32 kZAC (routine stat) Meight 35 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Stock 30 gi n all directions in acc. with IEC 60068-2-6 Tis H 150 Hz 230 gi 0 min . 50 °C Stock 30 gi n all directions in acc. with IEC 60068-2-7 Follution digree in acc. with EN 50178 2 Climatic class 30 gi n all directions in acc. with IEC 60068-2-8 Stock <td>Status display</td> <td>"DC OK" LED green /</td> | Status display | "DC OK" LED green / |
| Insulation voltage input / PE 3kV AC (routine test) Insulation voltage output / PE 500 VD C (routine test) Degree of protection P20 Class of protection IxW AC (routine test) Degree of protection P20 Class of protection IxW AC (routine test) Dimesions VI / I/ D (state of delivery) AUMox (AM(1) Dimensions W/ H / D (state of delivery) 240 mm / 130 mm / 125 mm Dimensions W / H / D (90° turned) 35 kg Ambient temperature (operation) 25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 26 °C, no condensation) Vibration (operation) 95 % (at 26 °C, no condensation) Stock 90 in all difrectones | General data | |
| 1.5 kV AC (routine test)Insulation voltage output/PE500 V DC (routine test)Degree of protectionP20Class of protectionI, with PE connectionMTBF> 500 000 hin acc. with IEC 61709 (SN 29500)Type of housingAluNx (AlMg1)Dimensions W /H / D (state of delivery)240 mm /130 mm /25 mmDimensions W /H /D (90° turned)122 mm /130 mm /243 mmWeight3.5 kgAmbient temperature (operation)A0° C 85 °CAmbient temperature (operation)40° C 85 °CMax, permissible relative humidity (operation)95 % (at 25 °C, no condensation)Vibration (operation)51 Hz, amplitude 2.5 mm in acc. with IEC 60068-2-6Shock30g in all directions in acc. with IEC 60068-2-6Shock30g in all directions in acc. with IEC 60068-2-6Pollution degree in acc. with EN 501782Electrical casi80 (0024 / Surge voltage category III)Stept ransformers for power supply unitsEN 61568-2-17Electrical safety (of information technology equipment)EN 60505 (SELV) EN 61568-217Electrical safety (of information technology equipment)EN 60505 (SELV) EN 61568-217Electri | Insulation voltage input/output | |
| Degree of protection IP20 Class of protection I, with PE connection MTBF > 500 000 h in acc. with IEC 61790 (SN 29500) MTBF > 500 000 h in acc. with IEC 61790 (SN 29500) Dimensions W / H / D (state of delivery) 240 mm / 130 mm / 125 mm Dimensions W / H / D (90° turned) 122 mm / 130 mm / 243 mm Weight 3.5 kg Ambient temperature (operation) A:5 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -40 °C 45 °C Max. permissible relative humidity (operation) 95 % (at 25 °C, no condensation) Vbration (operation) <15 Hz amplitude ±2.5 mm in acc. with IEC 60068-2-6 fits | Insulation voltage input / PE | |
| Class of protection I, with PE connection MTBF > 500 000 h in acc. with IEC 61709 (SN 29500) Type of housing AluNox (AlMg1) Dimensions W/ H/ D (state of delivery) 240 mm / 130 mm / 125 mm Dimensions W/ H/ D (90° turned) 122 mm / 130 mm / 243 mm Weight 3.5 kg Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Arbient temperature (storage/transport) 40 °C 85 °C Max. permissible relative humidity (operation) 25 °C 70 °C (> 60 °C derating) Arbient temperature (storage/transport) 40 °C 85 °C Max. permissible relative humidity (operation) 25 °C 70 °C (> 60 °C derating) Stock 30 gi nal directions in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068-2-6 ft 5 Hz. ang1 Lude 2.2 5 mm in acc. with IEC 60068- | Insulation voltage output / PE | 500 V DC (routine test) |
| MTBF> 500 000 h in acc. with IEC 61709 (SN 29500)Type of housingAluNox (AIMg1)Dimensions W / H / D (state of delivery)240 mm / 130 mm / 125 mmDimensions W / H / D (90° turned)122 mm / 130 mm / 243 mmDimensions W / H / D (90° turned)3.5 kgAmbient conditions-25 °C 70 °C (> 60 °C derating)Ambient temperature (storage/transport)-40 °C 85 °CMabient temperature (storage/transport)-40 °C 85 °CMabient temperature (storage/transport)-55 % (at 25 °C, no condensation)Vibration (operation)<5 % (at 25 °C, no condensation) | Degree of protection | IP20 |
| Type of housingAluNox (AIMg1)Dimensions W / H / D (state of delivery)240 mm / 130 mm / 125 mmDimensions W / H / D (90° turned)122 mm / 130 mm / 243 mmWeight3.5 kgAmbient conditionsAmbient temperature (sporation)Ambient temperature (sporation)-25 °C 70 °C (> 60 °C derating)Ambient temperature (storage/transport)-40 °C 85 °CMax. permissible relative humidity (operation)95 % (at 25 °C. no condensation)Vibration (operation)-15 Hz 150 Hz, 2.3g, 90 min.Shock30g in all directions in acc. with IEC 60068-2-61Pollution degree in acc. with EN 501782Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 605604 / Surge voltage category IIISafety transformers for power supply unitsEN 60560 (SELV) EN 60505 (SELV) EN 6 | Class of protection | I, with PE connection |
| Dimensions W / H / D (state of delivery)240 mm / 130 mm / 125 mmDimensions W / H / D (90° turned)122 mm / 130 mm / 243 mmWeight3.5 kgAmbient conditions | MTBF | > 500 000 h in acc. with IEC 61709 (SN 29500) |
| Dimensions W // H / D (90° turned) 122 mm / 130 mm / 243 mm Weight 3.5 kg Ambient conditions 25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (storage/transport) -40 °C 85 °C Max. permissible relative humidity (operation) 95 % (at 25 °C, no condensation) Vibration (operation) 55 % (at 25 °C, no condensation) Vibration (operation) 95 % (at 25 °C, no condensation) Shock 30g in all directions in acc. with IEC 60068-2-6 f15 Hz 150 Hz, 2.39, 90 min. Shock 30g in all directions in acc. with IEC 60068-2-27 Pollution degree in acc. with EN 50178 2 Climatic class 3K3 (in acc. with EN 60721) Standards Electrical Equipment for Machinery Electrical Equipment for Machinery EN 60204 / Surge voltage category III Safety transformers for power supply units EN 60256 (SELV) Electrical safety (of information technology equipment) EN 60350 (SELV) Electrical safety (of information technology equipment) EN 60350 (SELV) SELV EN 60050 (SELV) Safe isolation DIN VDE 0100-410 | Type of housing | AluNox (AlMg1) |
| Weight3.5 kgAmbient conditionsAmbient temperature (operation)-25 °C 70 °C (> 60 °C derating)Ambient temperature (storage/transport)40 °C 85 °CMax. permissible relative humidity (operation)95 % (at 25 °C, no condensation)Vibration (operation)<15 Hz, amplitude ±2.5 mm in acc. with IEC 60068-2-6 | Dimensions W / H / D (state of delivery) | 240 mm / 130 mm / 125 mm |
| Ambient conditions -25 °C 70 °C (> 60 °C derating) Ambient temperature (operation) -25 °C 70 °C (> 60 °C derating) Ambient temperature (storage/transport) -40 °C 85 °C Max. permissible relative humidity (operation) 95 % (at 25 °C, no condensation) Vibration (operation) -51 Hz, amplitude ±2.5 mm in acc. with IEC 60068-2-6 15 Hz, 150 Hz, 2.3g, 90 min. Shock 30g in all directions in acc. with IEC 60068-2-6 15 Hz, 150 Hz, 2.3g, 90 min. Shock 30g in all directions in acc. with IEC 60068-2-27 Pollution degree in acc. with EN 50178 2 Climatic class 3K3 (in acc. with EN 60721) Standards Electrical Equipment for Machinery Electrical Equipment for Machinery EN 60204 / Surge voltage category III Safety (of information technology equipment) EN 60520-17 Electrical safety (of information technology equipment) EN 60558-2-17 Electronic equipment for use in electrical power installations EN 50178/VDE 0160 (PELV) Safe isolation EN 50178/VDE 0160 (PELV) Safe isolation DIN VDE 0100-410 Protection against electric shock, basic requirements for safe isolation in electrical equipment DIN VDE 0106-101 Protection against electric shock, basic requirements for safe isol | Dimensions W / H / D (90° turned) | 122 mm / 130 mm / 243 mm |
| Ambient temperature (operation)-25 °C 70 °C (> 60 °C derating)Ambient temperature (storage/transport)40 °C 85 °CMax. permissible relative humidity (operation)95 % (at 25 °C, no condensation)Vibration (operation)<15 Hz, amplitude ±2.5 mm in acc. with IEC 60068-2-6 15 Hz 150 Hz, 2.3g, 90 min.Shock30g in all directions in acc. with IEC 60068-2-27Pollution degree in acc. with EN 501782Climatic class303 in all directions in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 6050 //DE 0805 (SELV) EN 61558-2-17Electrical safety (of information technology equipment)EN 60950 //DE 0805 (SELV) EN 60506 (SELV) EN 60504 / Surge voltage category IIISafe isolationDIN VDE 0100-410 DIN VDE 0100-410 DIN VDE 0106-101Protection against electric shockDIN 57100-410Protection against electric shock, basic requirements for safe isolation i electrical equipmentEN 6100-3-2Uimitation of mains harmonic currentsEN 6100-3-2Device safetyGS (tested safety) | Weight | 3.5 kg |
| Ambient temperature (storage/transport)40 °C 85 °CMax. permissible relative humidity (operation)95 % (at 25 °C, no condensation)Vibration (operation)<15 Hz, amplitude ±2.5 mm in acc. with IEC 60068-2-6 15 Hz 150 Hz, 2.39, 90 min.Shock30g in all directions in acc. with IEC 60068-2-27Pollution degree in acc. with EN 501782Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 61558-2-17Electrical safety (of information technology equipment)EN 60578/VDE 0805 (SELV) EN 61558-2-17Electroic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SzteEN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-101Protection against electric shockDIN S7100-410Protection against electric shock, basic requirements for safe isolation in electrical equipmentDIN VDE 0106-101Limitation of mains harmonic currentsEN 6100-3-2Device safetyGS (tested safety) | Ambient conditions | |
| Max. permissible relative humidity (operation)95 % (at 25 °C, no condensation)Vibration (operation)<15 Hz, amplitude ±2.5 mm in acc. with IEC 60068-2-6 15 Hz 150 Hz, 2.3g, 90 min.Shock30g in all directions in acc. with IEC 60068-2-27Pollution degree in acc. with EN 501782Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 61558-2-17Electrical safety (of information technology equipment)EN 60950/VDE 0805 (SELV) EN 60552-217Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SELVEN 60950 (VEL 000.410 DIN VDE 0100.410 DIN VDE 0100.410Protection against electric shockDIN VDE 0100.410 DIN VDE 0106.101Protection against electric shock, basic requirements for safe isolationDIN VDE 0106.101Limitation of mains harmonic currentsEN 61000-3-2Device safetyGS (tested safety) | Ambient temperature (operation) | -25 °C 70 °C (> 60 °C derating) |
| Vibration (operation)<15 Hz. amplitude ±2.5 mm in acc. with IEC 60068-2-6 15 Hz 150 Hz, 2.3g, 90 min.Shock30g in all directions in acc. with IEC 60068-2-27Pollution degree in acc. with EN 501782Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 60204 / Surge voltage category IIIElectrical safety (of information technology equipment)EN 60950/VDE 0805 (SELV) EN 61558-2-17Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SelvEN 60950 (SELV) EN 60505 (SELV) EN 60505 (SELV) EN 60505 (SELV) EN 60505 (SELV) EN 60505 (SELV) EN 60505 (SELV) EN 60500 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410 DIN VDE 0106-101Protection against electric shock, basic requirements for safe isolation in electrical equipmentEN 6100-3-2 GS (tested safety)Device safetyGS (tested safety) | Ambient temperature (storage/transport) | -40 °C 85 °C |
| Lit Hz15 Hz <th< td=""><td>Max. permissible relative humidity (operation)</td><td>95 % (at 25 °C, no condensation)</td></th<> | Max. permissible relative humidity (operation) | 95 % (at 25 °C, no condensation) |
| Pollution degree in acc. with EN 501782Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 60204 / Surge voltage category IIIElectrical safety (of information technology equipment)EN 60950/VDE 0805 (SELV) EN 61558-2-17Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SELVEN 60950 (SELV) EN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410 DIN VDE 0106-1010Protection against electric shock, basic requirements for safe isolation i electrical equipmentEN 6100-3-2Limitation of mains harmonic currentsEN 6100-3-2Device safetyGS (tested safety) | Vibration (operation) | |
| Climatic class3K3 (in acc. with EN 60721)StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 60520 / DE 0805 (SELV) En 61558-2-17Electrical safety (of information technology equipment)EN 60950/VDE 0805 (SELV) EN 61558-2-17Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SELVEn 60950 (SELV) EN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410 DIN VDE 0106-101Protection against electric shock, basic requirements for safe isolation in electrical equipmentEN 6100-3-2 EN 600-3-2Limitation of mains harmonic currentsEN 6100-3-2Device safetyGS (tested safety) | Shock | 30g in all directions in acc. with IEC 60068-2-27 |
| StandardsElectrical Equipment for MachineryEN 60204 / Surge voltage category IIISafety transformers for power supply unitsEN 61558-2-17Electrical safety (of information technology equipment)EN 60950/VDE 0805 (SELV) EN 61558-2-17Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SELVEN 60950 (SELV) EN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410 DIN VDE 0106-101Protection against electric shock, basic requirements for safe isolation in electrical equipmentDIN VDE 0106-101Limitation of mains harmonic currentsEN 61000-3-2Device safetyGS (tested safety) | Pollution degree in acc. with EN 50178 | 2 |
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| Electronic equipment for use in electrical power installationsEN 61558-2-17Electronic equipment for use in electrical power installationsEN 50178/VDE 0160 (PELV)SELVEN 60950 (SELV) EN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410 DIN 57100-410Protection against electric shock, basic requirements for safe isolation in electrical equipmentDIN 57100-410 DIN VDE 0106-101Protection against electric shock, basic requirements for safe isolation in electrical equipmentDIN 57100-410 DIN 57100-410Div VDE 0106-101GI (tested safety) | Safety transformers for power supply units | EN 61558-2-17 |
| SELVEN 60950 (SELV) EN 60204 (PELV)Safe isolationDIN VDE 0100-410 DIN VDE 0106-1010Protection against electric shockDIN 57100-410Protection against electric shock, basic requirements for safe isolation in electrical equipmentDIN 57100-410Limitation of mains harmonic currentsEN 61000-3-2Device safetyGS (tested safety) | Electrical safety (of information technology equipment) | |
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| electrical equipment Limitation of mains harmonic currents Device safety GS (tested safety) | Protection against electric shock | DIN 57100-410 |
| Device safety GS (tested safety) | | DIN VDE 0106-101 |
| | Limitation of mains harmonic currents | EN 61000-3-2 |
| Certificate CB Scheme | Device safety | GS (tested safety) |
| | Certificate | CB Scheme |

| Approvals | | | |
|--|-------------------|---|--|
| UL approvals | | UL/C-UL listed UL 508 UL/C-UL Recognized UL 60950 UL/C-UL Listed UL 1604 Class I, Division 2, Groups A, B, C, D | |
| Shipbuilding | | Germanischer Lloyd (EMC 2), ABS, DNV | |
| Current approvals can be found for the product in the download area. Conformance with EMC guideline 2004/108/EC and for low-voltage guideline 2006/95/EC | | | |
| Noise immunity according t | | | |
| Electrostatic discharge | EN 61000-4-2 | | |
| | Housing | Level 4 | |
| | Contact discharge | 8 kV | |
| | Discharge in air | 15 kV | |
| | Comments | Criterion B | |
| Electromagnetic HF field | EN 61000-4-3 | EN 61000-4-3 | |
| | Housing | Level 3 | |
| | Frequency range | 80 MHz 1 GHz | |
| | Field intensity | 10 V/m | |
| | Frequency range | 1.4 GHz 2 GHz | |
| | Field intensity | 10 V/m | |
| | Comments | Criterion A | |
| Fast transients (burst) | EN 61000-4-4 | | |
| | Input | 4 kV (level 4 - asymmetrical) | |
| | Output | 2 kV (Level 3 - asymmetrical) | |
| | Signal | 1 kV (Level 2 - asymmetrical) | |
| | Comments | | |
| Surge current loads (surge) | EN 61000-4-5 | | |
| | Input | 4 kV (inst. class 4 - asymmetrical: conductor to ground) 2 kV (Inst. Class 4 – symmetrical: Conductor to ground) | |
| | Output | 0.5 kV (level 1 - asymmetrical: conductor to ground) 0.5 kV (Level 1 - symmetrical: Conductor to ground) | |
| | Signal | 1 kV (level 2 - asymmetrical: conductor to ground) | |
| | Comments | Criterion B | |
| Conducted interference | EN 61000-4-6 | | |

Level 3 - asymmetrical

(mains buffering > 20 ms)

0.15 MHz ... 80 MHz

10 V Criterion A

 Comments
 Criterion B

 Emitted interference in acc. with EN 61000-6-3
 EN 55011 (EN 55022) Class B, area of application: Industry and residential

 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

Input

Input/Output/Signal

Frequency range

Voltage

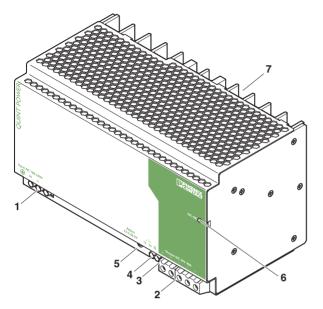
Comments

EN 61000-4-11

PHOENIX CONTACT 5

Voltage dips

5 Structure

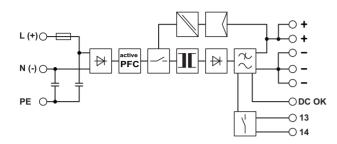


- 1 AC input
- 2 DC output
- 3 DC OK output active
- 4 DC OK output, floating
- 5 Potentiometer (covered) 22.5 ... 29.5 V DC
- 6 "DC OK" LED, green
- 7 DIN rail adapter

| | [mm ²] | | AWG | [Nm] |
|--------|--------------------|----------|---------|-----------|
| | solid | stranded | | Torque |
| Input | 0.2 - 6 | 0.2 - 4 | 24 - 10 | 0.5 - 0.6 |
| Output | 0.5 - 16 | 0.5 - 10 | 20 - 6 | 0.5 - 0.6 |
| Signal | 0.2 - 6 | 0.2 - 4 | 24 - 10 | 0.5 - 0.6 |

| Input data | |
|--|--|
| Input nominal voltage range | 110 V AC 240 V AC |
| AC input voltage range | 85 V AC 264 V AC (Derating < 100 V DC: 2.5%/V) |
| DC input voltage range | 90 V DC 350 V DC (Derating < 110 V DC: 2.5%/V) |
| AC frequency range | 45 Hz 65 Hz |
| DC frequency range | 0 Hz |
| Input fuse, integrated | 20 A (fast blow, internal) |
| Recommended backup fuse for mains protection | 16 A (characteristic B) 20 A (characteristic B) |
| Type of connection | Screw connection |
| Stripping length | 7 mm |
| Output data | |
| Nominal output voltage | 24 V DC ±1% |
| Setting range of the output voltage | 22.5 V DC 29.5 V DC (> 24 V constant capacity) |
| Output current | 40 A (-25 °C 60 °C) 45 A (with POWER BOOST, -25°C 40°C permanent) |
| Type of connection | Screw connection |
| Stripping length | 10 mm |

6 Block diagram



7 Safety and warning notes



DANGER OF EXPLOSION!

Only remove equipment when it is disconnected and not in the potentially explosive area. **DANGER**

The device contains dangerous live elements and high levels of stored energy. Never carry out work when the power is turned on.



Before startup please ensure:

The mains connection has been carried out by a competent person and protection against electric shock is guaranteed!

The device can be disconnected outside the power supply unit in accordance with the regulations as in EN 60950 (e.g. through primary side line protection)!

The ground conductor is connected!

All feed lines are sufficiently protected and dimensioned!

All output lines are dimensioned according to the maximum output current of the device or separately protected!

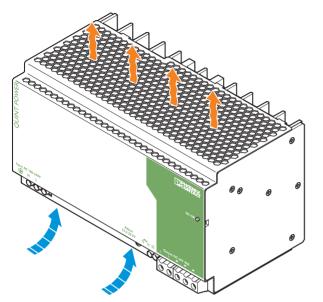
Sufficient convection must be guaranteed.



CAUTION

The power supply units are built-in devices. The device may only be installed and put into operation by qualified personnel. The corresponding national regulations must be observed.

8 Installation



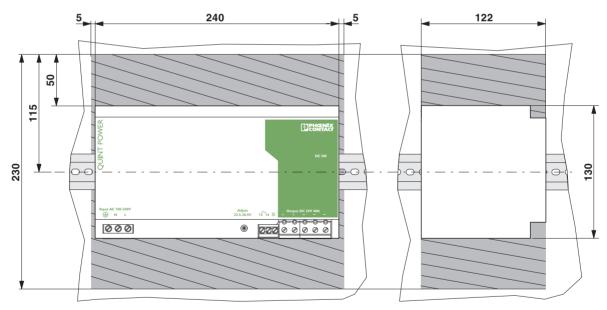
Note:

i

To ensure sufficient convection, we recommend the following minimum spacing be used between modules: 5 cm for vertical installation and 0 cm for horizontal installation.

The power supply unit can be snapped onto all DIN rails in acc. with EN 60715. They must be mounted horizontally (connecting terminal blocks bottom).

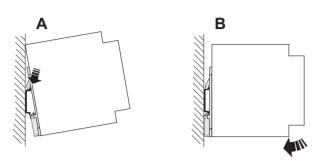
9 Installation position



Low-profile installation: Installation depth 125 mm (+ DIN rail)

Mounting position rotated 90°: Installation depth 243 mm (+ DIN rail)

10 Mounting on DIN rails



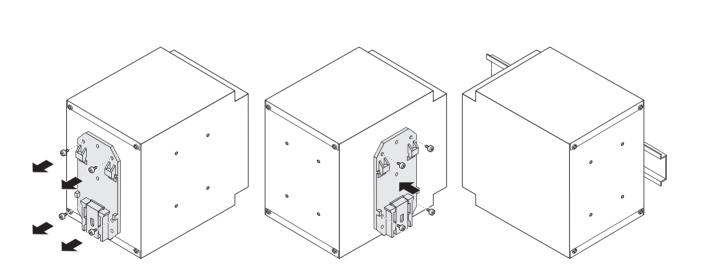
Low-profile installation

Assembly:

Position the module with the DIN rail guide on the upper edge of the DIN rail, and snap it in with a downward motion.

Removing:

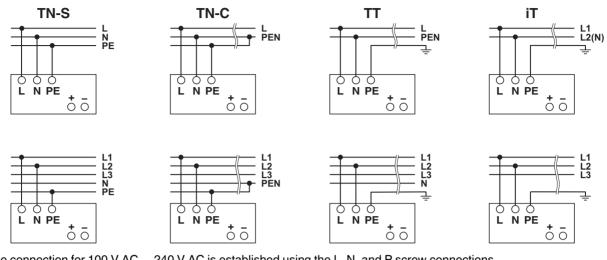
Pull the snap lever open with the aid of a screwdriver and slide the module out at the lower edge of the DIN rail.



B

Mounting position rotated 90°

For a mounting position rotated at 90° to the DIN rail, mount the DIN rail adapter (UTA 107) as shown in the figure. No additional assembly material is required. Mounting screws: Torx T10 (0.8 Nm ... 0.9 Nm tightening torque).



11 Connection, network forms 100...240 V AC networks

The connection for 100 V AC ... 240 V AC is established using the L, N, and P screw connections. The device can be connected to 1-phase AC networks or to two of the phase conductors of three-phase systems (TN, TT or IT systems in accordance with VDE 0100-300/IEC 60364-3) with nominal voltages of 100 V AC ... 240 V AC. The device also continues to work on short-term input voltages > 300 V AC.

ATTENTION

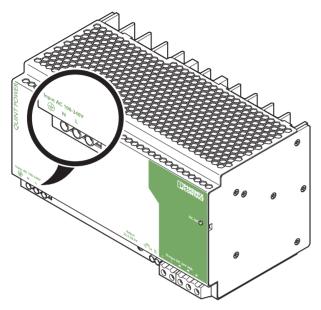
Suggestion: In AC connections, connect a maximum of one power supply unit to a fuse or a power switch.

In order to comply with UL approval, use copper cables with an operating temperature of > $75^{\circ}C$ (ambient temperature < $75^{\circ}C$) and > $90^{\circ}C$ (ambient temperature < $75^{\circ}C$).

To meet EN 60950/UL 60950, flexible cables must be fitted with ferrules. To meet GL requirements, unused terminal compartments should be closed. For reliable and safe-to-touch connections, strip the cable ends according to the table in the "Structure" section.

12 Input

13





CAUTION

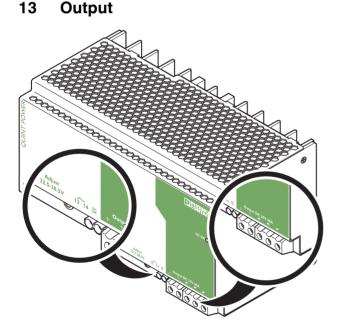
If an internal fuse is triggered, there is a device malfunction. In this case, the device must be inspected in the factory.

Protection of the primary side

The device must be installed in acc. with the regulations as in EN 60950. It must be possible to disconnect the device using a suitable isolating facility outside the power supply. The primary side line protection, for example, is suitable. For device protection, there is an internal fuse. Additional device protection is not necessary.

Permissible backup fuse for mains protection

Power circuit-breaker 16 A or 25 A, characteristic B (or identical function). In DC applications, a suitable backup fuse must be wired in!



ATTENTION

Make sure that all output lines are dimensioned according to the maximum output current or are separately protected. The cables on the secondary side must have sufficiently large cross sections in order to keep the voltage drops on the lines as low as possible.

The connection is established via the screw connections on the screw connection of the DC output: 24 V DC: "+" and "-"; DC OK switching output active: "DC OK" and "-"; DC OK output floating: "13" and "14". The output voltage set upon delivery is 24 V DC. The output voltage can be set on the potentiometer.

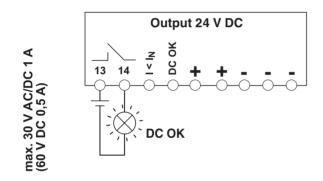
Protection of the secondary side

The device is electronically protected against short-circuit and idling. In the event of a malfunction, the output voltage is limited to 35 V DC. Make sure that all output lines are dimensioned according to the maximum output current or are separately protected! The cables on the secondary side should have large cross sections in order to keep the voltage drops on the lines as low as possible.

14 Signaling

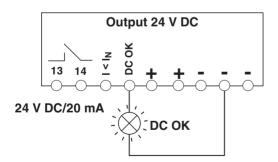
The active DC OK signal output and the floating DC OK signal contact are provided to monitor the function. In addition, the DC OK LED can be used to evaluate the function of the power supply directly at the installation location (see output characteristic curve).

| | I < I _N | U _{OUT} < 0.9 x U _N |
|----------------------------------|--|--|
| "DC OK" LED | ON | Flashing |
| Active DC OK switching output | ON | OFF |
| Floating DC OK output | Closed | Open |
| Meaning | Normal operation of the power supply unit $(U_{OUT} > 21.5 V)$ | Overload mode, e.g. consumer short circuit or overload |



Floating contact

The floating signal contact opens and indicates that the set output voltage has been undershot by more than 10 %. Signals and ohmic loads up to a maximum of 30 V AC/DC and currents to a maximum of 1 A (or maximum of 60 V DC with a maximum of 0.5 A) can be switched. For heavily inductive loads such as a relay, a suitable protection circuit (e.g., damping diode) is necessary.



Active signal output

The 24 V DC signal is applied between the "DC OK" and "-" connecting terminal blocks and can carry up to 40 mA. This signal output signalizes when the output voltage is more than 10% below the output voltage by switching from "active high" to "low".

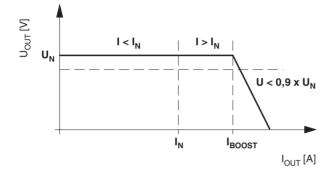
The DC OK signal is decoupled from the power output. It is thus not possible for parallel switched devices to provide external supply.

The 24 V DC signal can be directly connected to a logic input for evaluation.

Signal loop

Monitoring two devices: Use the active signal output of device 1 and loop in the floating signal output of device 2. In the event of malfunctioning, a common alarm is output. Any number of devices can be looped in. This signal combination saves wiring costs and logic inputs.

15 Function

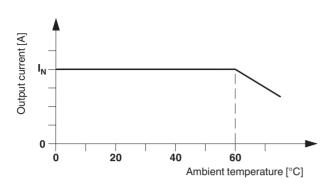


Output characteristic curve

The power supply works with the static POWER BOOST power reserve as shown in the U/I characteristic curve in the figure. At ambient temperatures $T_{amb} < +40$ °C, I_{BOOST} is available continuously. At higher temperatures, it is available for a few minutes. In the event of a secondary-side short circuit or overload, the output current is limited to I_{BOOST} . Thereby, the module does not switch off, but rather supplies a continuous output current. The secondary voltage is reduced here until the short circuit is eliminated. The U/I characteristic curve with the POWER BOOST power reserve ensures that both high inrush currents of capacitive loads as well as loads with DC/DC converters in the primary circuit can be supplied.

In order to trip standard circuit breakers magnetically and therefore quickly, power supply units have to provide a multiple of the nominal current for a short time. The characteristic curve shows when I < I_N, I > I_N and U is < 0.9 x U_N. The "signaling" table is to be consulted for the respective signaling.

 $U_{N} = 24 V$ $I_{N} = 40 A$ $I_{Boost} = 45 A$ $P_{N} = 960 W$ $P_{Boost} = 1080 W$

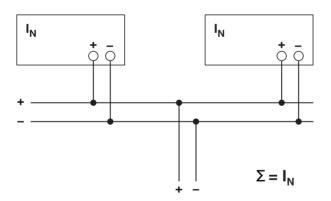


Thermal behavior

With an ambient temperature of up to +40°C, the device supplies the continuous output current of I_{BOOST} . The device can supply a nominal output current of I_N with ambient temperatures of up to +60°C. In the case of ambient temperatures above +60°C, the output current must be reduced by 2.5% per Kelvin increase in temperature. The device does not switch off at ambient temperatures of +70°C or thermal overload. The output capacity is reduced as far as necessary to provide device protection. After it has cooled down, the output capacity is increased again.

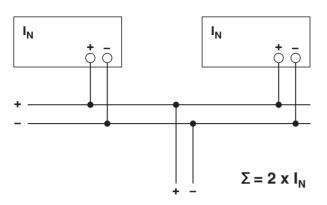
Parallel operation

Devices of the same type can be connected in parallel to increase both redundancy and power. By default upon delivery, no further adjustments are required. If the output voltage is adjusted, a uniform distribution of power is guaranteed by setting all parallel operated power supply units to exactly the same output voltage. To ensure symmetrical current distribution we recommend that all cable connections from the power supply unit to the busbar are the same length and have the same cross section. Depending on the system, for parallel connection of more than two power supplies a protective circuit should be installed at each individual device output (e.g., decoupling diode, DC fuse or circuit breaker). This prevents high return currents in the event of a secondary device fault.



Redundant operation

Redundant circuits are suitable for the supply of systems which make especially high requirements on the operational safety. If a fault occurs in the primary circuit of the first power supply unit, the second device automatically takes over the entire power supply, without interruption, and vice versa. For this reason, the power supply units to be connected in parallel are dimensioned in such a way that the total current requirement of all consumers can be completely covered by one power supply unit. 100% redundancy makes external decoupling diodes necessary (QUINT-DIODE/40, Order No. 2938963)!



Increased performance

For n parallel connected devices, the output current can be increased to n x I_N . Parallel connection for increasing power is used when extending existing systems. A parallel connection is recommended if the power supply unit does not cover the current consumption of the most powerful load. Otherwise, the load should be divided between individual devices that are independent from one another.

>>Phoenix Contact(菲尼克斯)