

## Power supply unit - TRIO-PS-2G/1AC/24DC/5/B+D - 2903144

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Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: 1-phase, output: 24 V DC/5 A

### Product Description

TRIO POWER power supplies for more stringent EMC requirements in shipbuilding

The TRIO POWER power supply range with Push-in connection has been perfected for use in shipbuilding. 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

- ✓ Can be used on the bridge of a ship in accordance with EN 60945
- ✓ 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
- ✓ Electrically robust, thanks to high electric strength
- ✓ Mechanically robust, thanks to high vibration and shock resistance
- ✓ Save time and costs, thanks to the Push-in connection and narrow design



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 726955 |
| GTIN                                 | 4046356726955                                                                                           |
| Weight per Piece (excluding packing) | 0.560 g                                                                                                 |
| Custom tariff number                 | 85044030                                                                                                |
| Country of origin                    | China                                                                                                   |

### Technical data

#### Dimensions

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## Technical data

### Dimensions

|                                  |               |
|----------------------------------|---------------|
| Width                            | 35 mm         |
| Height                           | 130 mm        |
| Depth                            | 115 mm        |
| Installation distance right/left | 0 mm / 0 mm   |
| Installation distance top/bottom | 50 mm / 50 mm |

### Ambient conditions

|                                                                     |                                              |
|---------------------------------------------------------------------|----------------------------------------------|
| Degree of protection                                                | IP20                                         |
| Inflammability class in acc. with UL 94 (housing / terminal blocks) | V0                                           |
| Ambient temperature (operation)                                     | -25 °C ... 70 °C (> 60 °C Derating: 2,5 %/K) |
| Ambient temperature (start-up type tested)                          | -25 °C                                       |
| Ambient temperature (storage/transport)                             | -40 °C ... 85 °C                             |
| Max. permissible relative humidity (operation)                      | ≤ 95 % (at 25 °C, non-condensing)            |
| Climatic class                                                      | 3K3 (in acc. with EN 60721)                  |
| Degree of pollution                                                 | 2                                            |
| Installation height                                                 | ≤ 5000 m (> 2000 m, observe derating)        |

### Input data

|                                          |                                           |
|------------------------------------------|-------------------------------------------|
| Nominal input voltage range              | 100 V AC ... 240 V AC                     |
|                                          | 110 V DC ... 250 V DC                     |
| Input voltage range                      | 100 V AC ... 240 V AC -15 % ... +10 %     |
|                                          | 99 V DC ... 275 V DC                      |
| Dielectric strength maximum              | ≤ 300 V AC 15 s                           |
| AC frequency range                       | 50 Hz ... 60 Hz ±5 Hz                     |
| Frequency range (f <sub>N</sub> )        | 50 Hz ... 60 Hz ±10 %                     |
| Discharge current to PE                  | < 0.25 mA                                 |
| Current consumption                      | 2.2 A (100 V AC)                          |
|                                          | 1.9 A (120 V AC)                          |
|                                          | 1.1 A (230 V AC)                          |
|                                          | 1.1 A (240 V AC)                          |
| Nominal power consumption                | 272 VA                                    |
| Inrush current                           | ≤ 16 A (typical)                          |
| Mains buffering time                     | typ. 20 ms (120 V AC)                     |
|                                          | typ. 100 ms (230 V AC)                    |
| Input fuse                               | 6.3 A (internal (device protection))      |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |
| Power factor (cos phi)                   | 0.5                                       |
| Type of protection                       | Transient surge protection                |

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## Technical data

### Input data

|                              |          |
|------------------------------|----------|
| Protective circuit/component | Varistor |
|------------------------------|----------|

### Output data

|                                                    |                                                               |
|----------------------------------------------------|---------------------------------------------------------------|
| Nominal output voltage                             | 24 V DC $\pm 1\%$                                             |
| 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)                                    |
| Connection in parallel                             | yes, for redundancy and increased capacity                    |
| Connection in series                               | yes                                                           |
| Feedback voltage resistance                        | $\leq 35$ V DC                                                |
| Protection against overvoltage at the output (OVP) | $\leq 30$ 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 $\pm 10\%$ )                 |
| Residual ripple                                    | < 50 mV <sub>PP</sub> (with nominal values)                   |
| Output power                                       | 120 W                                                         |
| Typical response time                              | < 1 s                                                         |
| Maximum no-load power dissipation                  | < 1 W                                                         |
| Power loss nominal load max.                       | < 16 W                                                        |

### General

|                                                                     |                                                                                      |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Net weight                                                          | 0.45 kg                                                                              |
| Efficiency                                                          | > 89 % (for 230 V AC and nominal values)                                             |
| MTBF (IEC 61709, SN 29500)                                          | > 3380000 h (25 °C)                                                                  |
|                                                                     | > 1970000 h (40 °C)                                                                  |
|                                                                     | > 900000 h (60 °C)                                                                   |
| Insulation voltage input/output                                     | 3 kV AC (type test)                                                                  |
|                                                                     | 1.5 kV AC (routine test)                                                             |
| Degree of protection                                                | IP20                                                                                 |
| Protection class                                                    | II (in closed control cabinet)                                                       |
| Inflammability class in acc. with UL 94 (housing / terminal blocks) | V0                                                                                   |
| Mounting position                                                   | horizontal DIN rail NS 35, EN 60715                                                  |
| Assembly instructions                                               | alignable: horizontally 0 mm ( $\leq 40$ °C) 10 mm ( $\leq 70$ °C), vertically 50 mm |

### Connection data, input

|                                    |                     |
|------------------------------------|---------------------|
| Connection method                  | Push-in connection  |
| Conductor cross section solid min. | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max. | 4 mm <sup>2</sup>   |

## Power supply unit - TRIO-PS-2G/1AC/24DC/5/B+D - 2903144

### Technical data

#### Connection data, input

|                                       |                     |
|---------------------------------------|---------------------|
| 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.      | 12                  |
| Stripping length                      | 10 mm               |

#### Connection data, output

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Push-in connection  |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 4 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.      | 12                  |
| Stripping length                      | 8 mm                |

#### Connection data for signaling

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Push-in connection  |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 1.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 1.5 mm <sup>2</sup> |
| Conductor cross section AWG min.      | 24                  |
| Conductor cross section AWG max.      | 16                  |
| Stripping length                      | 8 mm                |

### Standards

|                                                                                                                                  |                                                            |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| EMC requirements for noise immunity                                                                                              | EN 61000-6-1                                               |
|                                                                                                                                  | EN 61000-6-2                                               |
| EMC requirements for noise emission                                                                                              | EN 61000-6-3                                               |
|                                                                                                                                  | EN 61000-6-4                                               |
| Standard - Safety of transformers                                                                                                | EN 61558-2-16 (air clearances and creepage distances only) |
| Standard - Electrical safety                                                                                                     | IEC 62368-1 (SELV)                                         |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV)                                   |
| Standard – Safety extra-low voltage                                                                                              | IEC 62368-1 (SELV) und EN 60204-1 (PELV)                   |
| Standard - Safe isolation                                                                                                        | DIN VDE 0100-410                                           |
| Standard – Limitation of mains harmonic currents                                                                                 | EN 61000-3-2                                               |
| Mains variation/undervoltage                                                                                                     | Semi F47-0706                                              |

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## Technical data

### Standards

|                   |            |
|-------------------|------------|
| Rail applications | EN 50121-4 |
|-------------------|------------|

### Conformance/approvals

|                       |                               |
|-----------------------|-------------------------------|
| UL approvals          | UL Listed UL 508              |
|                       | UL/C-UL Recognized UL 60950-1 |
| Shipbuilding approval | DNV GL (EMC B)                |
|                       | IEC 60945                     |

### EMC data

|                               |                                                   |
|-------------------------------|---------------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU         |
| Low Voltage Directive         | Conformance with Low Voltage Directive 2014/35/EC |
| Electrostatic discharge       | EN 61000-4-2                                      |
| Contact discharge             | 6 kV (Test Level 4)                               |
| Discharge in air              | 8 kV (Test Level 4)                               |
| Electromagnetic HF field      | EN 61000-4-3                                      |
| 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)       | EN 61000-4-4                                      |
| 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)    | EN 61000-4-5                                      |
| Input                         | 2 kV (Test Level 3 - symmetrical)                 |
|                               | 6 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 B                                       |
| Conducted interference        | EN 61000-4-6                                      |
| Frequency range               | 0.15 MHz ... 80 MHz                               |
| Voltage                       | 10 V (Test Level 3)                               |
| Comments                      | Criterion A                                       |

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## Technical data

### EMC data

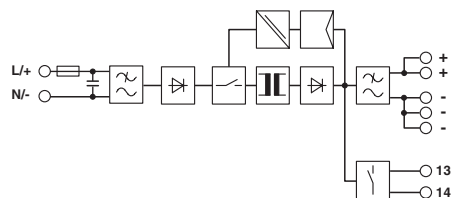
|             |                                                                                      |
|-------------|--------------------------------------------------------------------------------------|
| Criterion A | Normal operating behavior within the specified limits.                        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

### Environmental Product Compliance

|            |                |
|------------|----------------|
| REACH SVHC | Lead 7439-92-1 |
|------------|----------------|

## Drawings

Block diagram



## Classifications

### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27040701 |
| eCl@ss 11.0   | 27040701 |
| eCl@ss 4.0    | 27040700 |
| eCl@ss 4.1    | 27040700 |
| eCl@ss 5.0    | 27049000 |
| eCl@ss 5.1    | 27049000 |
| eCl@ss 6.0    | 27049000 |
| eCl@ss 7.0    | 27049002 |
| eCl@ss 9.0    | 27040701 |

### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC001039 |
| ETIM 4.0 | EC000599 |
| ETIM 6.0 | EC002540 |
| ETIM 7.0 | EC002540 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211502 |
| UNSPSC 7.0901 | 39121004 |
| UNSPSC 11     | 39121004 |

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### Classifications

#### UNSPSC

|              |          |
|--------------|----------|
| UNSPSC 12.01 | 39121004 |
| UNSPSC 13.2  | 39121004 |
| UNSPSC 18.0  | 39121004 |
| UNSPSC 19.0  | 39121004 |
| UNSPSC 20.0  | 39121004 |
| UNSPSC 21.0  | 39121004 |

### Approvals

#### Approvals

##### Approvals

DNV GL / BSH / UL Listed / UL Recognized / cUL Recognized / cUL Listed / EAC / EAC / cULus Recognized / cULus Listed

##### Ex Approvals

#### Approval details

|                |                                                                                     |                                                                                                                                                       |               |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| DNV GL         |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                     | TAA00000BM    |
| BSH            |                                                                                     |                                                                                                                                                       | Nr. 967       |
| UL Listed      |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528 |
| UL Recognized  |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944 |
| cUL Recognized |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944 |

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### Approvals

cUL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 123528

EAC



RU S-  
DE.BL08.W.00764

EAC



RU S-  
DE.BL08.W.00764

cULus Recognized



cULus Listed



### Accessories

#### Accessories

##### Device circuit breakers

##### Electronic circuit breaker - CBM E4 24DC/0.5-10A NO-R - 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 - CBM E8 24DC/0.5-10A NO-R - 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.

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### Accessories

#### Potential distributor

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



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

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