

TRIO-PS-2G/3AC – 3 Phase DIN Rail Power Supply

 [perle.com/products/industrial-power-supply/trio-3-phase.shtml](https://www.perle.com/products/industrial-power-supply/trio-3-phase.shtml)

Switching Power Supplies for Regulated AC to DC Conversion

- 24V DC Output Voltage
- Output Amps: 5, 10, 20, or 40 Amps
- Output Watts: 120, 240, 480, or 960 W
- 3-phase AC Input Voltage Range: 320 to 575 V AC
- 2-phase AC Input Voltage Range: 360 to 575 V AC



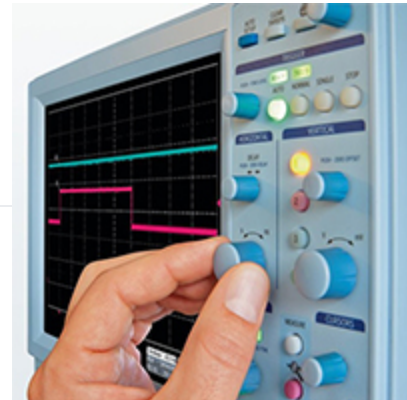
The **TRIO 3-Phase Power Supplies** offer a complete range of rugged AC to DC Converters built to meet the high stability and efficiency expectations of industrial, machine automation and process control environments. These Switch Mode Power Supplies ensure a regulated output voltage even in the event of voltage fluctuations in the power supply network. With all required safety certifications to support ITE (Information Technology Equipment), ruggedized packaging, extended operating temperatures, high peak load capabilities and high isolation voltages, TRIO 3-Phase Power Supplies are designed to meet the needs of your high power industrial application.

150% Dynamic Power Boost

The dynamic boost provides additional power for starting difficult loads. By supplying up to 150% of the nominal current for 5 seconds TRIO power supplies start difficult loads reliably.

24 to 28 V DC Adjustable Output Voltage Range

Using the rotary potentiometer on the front face of the TRIO power supply, the output voltage can be optimally adjusted to meet specific application environment requirements. For example, you can easily adjust to compensate for a voltage drop caused by a long cable length.



Industrial operating temperature of -25°C to +70°C

Equipment found in traffic management, oil and gas pipelines, weather tracking, industrial and outdoor applications must function in temperatures that cannot be supported by a commercial power supplies. With an operating temperature of -25°C to +70°C, the TRIO 3-Phase Power Supply is ideal for use with equipment subjected to harsh environments and severe temperatures. Some models even guarantee reliable device start-up at -40°C.

High efficiency and low no load power consumption

Compared with other products on the market, the TRIO 3-Phase Power Supply provides excellent energy savings. With a very low no load power consumption and over high efficiency at nominal load, just a small amount of electrical energy is converted into undesired heat energy making these very ECO friendly power supplies.

Easy & efficient installation

The tool-free Push-in connection will save time and make installation quick and easy. And, the DIN Rail mount narrow housing will save space in the control cabinet.



Ideal application environments for a TRIO DIN Rail Power Supply

- drive motors and other devices
- machine building
- automated production process
- industrial control, automation, assembly, and test equipment
- building control, security and surveillance, and climate control systems.
- power countless industrial automation devices such as sensors, controllers and valves

Other reasons to choose a TRIO Industrial Power Supply

- Contact signal output and LED indicator for voltage out failure: If the output voltage is below the operational range, the LED turns off and the contact opens.
- Vibration resistance up to 4 kg
- Shock resistance up to 30g
- Voltage Isolation input/output: 3 kV AC
- Protections: Short-circuit, Overload, Over voltage, Over-temperature
- High MTBF (Mean Time Between Failure) values of more than 1 million hours at +40°C ensure maximum availability

TRIO-PS-2G/3AC/24DC/5 - 29031538	TRIO-PS-2G/3AC/24DC/10 - 29031548	TRIO-PS-2G/3AC/24DC/20 - 29031558	TRIO-PS-2G/3AC/24DC/40 - 29031568
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Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 25;	Environmentally Friendly Use Period = 25;	Environmentally Friendly Use Period = 25;	Environmentally Friendly Use Period = 25;
REACH SVHC			Lead 7439-92-1	Lead 7439-92-1

General

Net weight	0.4 kg	0.9 kg	1.5 kg	2.6 kg
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Efficiency	> 91 % (at 400 V AC and nominal value)	> 92 % (at 400 V AC and nominal value)	> 93 % (400 V AC)	typ. 93 % (400 V AC)
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Insulation voltage input/output	3 kV AC (type test)	3 kV AC (type test)	3 kV AC (type test)	3 kV AC (type test)
	1.5 kV AC (routine test)	1.5 kV AC (routine test)	1.5 kV AC (routine test)	1.5 kV AC (routine test)
Protection class	II (in closed control cabinet)	I (in closed control cabinet)	I (in closed control cabinet)	I (in closed control cabinet)
Degree of protection	IP20	IP20	IP20	IP20
MTBF (IEC 61709, SN 29500)	> 2300000 h (25 °C)	> 2100000 h (25 °C)	> 1800000 h (25 °C)	> 1730000 h (25 °C)
	> 1300000 h (40 °C)	> 1200000 h (40 °C)	> 1100000 h (40 °C)	> 1051000 h (40 °C)
	> 620000 h (60 °C)	> 590000 h (60 °C)	> 510000 h (60 °C)	> 510000 h (60 °C)
Mounting position	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715
Assembly instructions	alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Efficiency			500 V AC	typ. 93.3 % (480 V AC)
Standards and Regulations				
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011 (EN 55022)	EN 55011 (EN 55022)	EN 55011 (EN 55022)	EN 55011 (EN 55022)
Noise immunity	Immunity according to EN 61000-6-2 (industrial)	Immunity according to EN 61000-6-2 (industrial)	Immunity according to EN 61000-6-2 (industrial)	Immunity according to EN 61000-6-1 (residential), EN 61000-6-2 (industrial)
Standards/regulations	EN 61000-4-2	EN 61000-4-2	EN 61000-4-2	EN 61000-4-2
Contact discharge	4 kV (Test Level 2)	4 kV (Test Level 2)	4 kV (Test Level 2)	4 kV (Test Level 2)
Standards/regulations	EN 61000-4-3	EN 61000-4-3	EN 61000-4-3	EN 61000-4-3

Frequency range	80 MHz ... 1 GHz	80 MHz ... 1 GHz	80 MHz ... 1 GHz	80 MHz ... 1 GHz
Test field strength	10 V/m (Test Level 3)	10 V/m (Test Level 3)	10 V/m (Test Level 3)	10 V/m (Test Level 3)
Frequency range	1.4 GHz ... 2 GHz	1.4 GHz ... 2 GHz	1.4 GHz ... 2 GHz	1.4 GHz ... 2 GHz
Test field strength	3 V/m (Test Level 2)	3 V/m (Test Level 2)	3 V/m (Test Level 2)	3 V/m (Test Level 2)
Standards/regulations	EN 61000-4-4	EN 61000-4-4	EN 61000-4-4	EN 61000-4-4
Comments	Criterion B	Criterion B	Criterion B	Criterion B
Standards/regulations	EN 61000-6-3	EN 61000-6-3	EN 61000-6-3	EN 61000-6-3
	EN 61000-4-6	EN 61000-4-6	EN 61000-4-6	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz	0.15 MHz ... 80 MHz	0.15 MHz ... 80 MHz	0.15 MHz ... 80 MHz
Voltage	10 V (Test Level 3)	10 V (Test Level 3)	10 V (Test Level 3)	10 V (Test Level 3)
Conducted noise emission	EN 55016 EN 61000-6-4 (Class A)	EN 55016 EN 61000-6-4 (Class A)	EN 55016 EN 61000-6-4 (Class A)	EN 55016 EN 61000-6-4 (Class A)
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC	Conformance with Low Voltage Directive 2014/35/EC	Conformance with Low Voltage Directive 2014/35/EC	Conformance with Low Voltage Directive 2014/35/EC
Standard - Safety of transformers	EN 61558-2-16 (air clearances and creepage distances only)	EN 61558-2-16 (air clearances and creepage distances only)	EN 61558-2-16 (air clearances and creepage distances only)	
Standard - Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Standard – Safety extra-low voltage	IEC 60950-1 (SELV) and EN 60204-1 (PELV)	IEC 60950-1 (SELV) and EN 60204-1 (PELV)	IEC 60950-1 (SELV) and EN 60204-1 (PELV)	IEC 60950-1 (SELV) and EN 60204-1 (PELV)
Standard - Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410	DIN VDE 0100-410	DIN VDE 0100-410

Standard – Limitation of mains harmonic currents	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2
UL approvals	UL Listed UL 508	UL Listed UL 508	UL Listed UL 508	UL Listed UL 508
	UL/C-UL Recognized UL 60950-1	UL/C-UL Recognized UL 60950-1	UL/C-UL Recognized UL 60950-1	UL/C-UL Recognized UL 60950-1
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)	18 ms, 30g, in each space direction (according to IEC 60068-2-27)	18 ms, 30g, in each space direction (according to IEC 60068-2-27)	11 ms, 15g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)	DNV GL CG-0339 / Class B 2 Hz - 100 Hz resonance search, 90 min. in resonance, 2 Hz - 13.2 Hz, ±1 mm amplitude, 13.2 Hz - 100 Hz, 0.7g acceleration
	15 Hz ... 150 Hz, 4g, 90 min.	15 Hz ... 150 Hz, 4g, 90 min.	15 Hz ... 150 Hz, 4g, 90 min.	
Rail applications	EN 50121-4	EN 50121-4	EN 50121-4	EN 50121-4
Shipbuilding approval			GL applied for	
Standards/regulations				EN 61000-4-11
Overvoltage category (EN 60950-1)				II
Overvoltage category (EN 62477-1)				III
Connection data, input				
Connection method	Push-in connection	Push-in connection	Push-in connection	Push-in connection
Conductor cross section solid min.	0.2 mm ²	0.2 mm ²	0.2 mm ²	0.2 mm ²
Conductor cross section solid max.	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Conductor cross section flexible min.	0.2 mm ²	0.2 mm ²	0.2 mm ²	0.2 mm ²

Conductor cross section flexible max.	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
Conductor cross section AWG min.	24	24	24	24
Conductor cross section AWG max.	12	12	12	12
Stripping length	10 mm	10 mm	10 mm	10 mm
Output data				
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U _{Set})	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Nominal output current (I _N)	5 A	10 A	20 A	40 A
Dynamic Boost (I _{Dyn.Boost})	7.5 A (5 s)	15 A (5 s)	30 A (5 s)	60 A (5 s)
Derating	> 60 °C ... 70 °C (2.5%/K)	> 60 °C ... 70 °C (2.5%/K)	> 60 °C ... 70 °C (2.5%/K)	> 60 °C ... 70 °C (2.5%/K)
Connection in parallel	Yes, for redundancy and increased capacity	Yes, for redundancy and increased capacity	Yes, for redundancy and increased capacity	Yes, for redundancy and increased capacity
Connection in series	yes	yes	yes	yes
Protection against surge voltage on the output	≤ 30 V DC	≤ 30 V DC	≤ 30 V DC	≤ 30 V DC
Control deviation	< 1 % (change in load, static 10 % ... 90 %)	< 1 % (change in load, static 10 % ... 90 %)	< 1 % (change in load, static 10 % ... 90 %)	< 1 % (change in load, static 10 % ... 90 %)
	< 3 % (Dynamic load change 10 % ... 90 %, 10 Hz)	< 3 % (Dynamic load change 10 % ... 90 %, 10 Hz)	< 3 % (Dynamic load change 10 % ... 90 %, 10 Hz)	< 3 % (Dynamic load change 10 % ... 90 %, 10 Hz)
	< 0.1 % (change in input voltage ±10 %)	< 0.1 % (change in input voltage ±10 %)	< 0.1 % (change in input voltage ±10 %)	< 0.1 % (change in input voltage ±10 %)
Residual ripple	≤ 20 mV _{PP}	≤ 20 mV _{PP}	≤ 20 mV _{PP}	≤ 50 mV _{PP}
Output power	120 W	240 W	480 W	960 W
Typical response time	< 1 s	< 1 s	< 1 s	< 1 s

Maximum power dissipation in no-load condition	< 1 W (400 V AC)	< 1.1 W (400 V AC)	< 1.2 W (400 V AC)	< 14 W (400 V AC)
Power loss nominal load max.	< 12 W (480 V AC)	< 22 W (480 V AC)	< 38 W (480 V AC)	< 68 W (480 V AC)
Feedback resistance				< 35 V
Short-circuit current				< (Permanent)

Connection data for signaling

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

Dimensions

Width	35 mm	42 mm	65 mm	110 mm
Height	130 mm	130 mm	130 mm	130 mm
Depth	115 mm	160 mm	160 mm	160 mm
Weight per piece	568.5 GRM	1070.0 GRM	1717.0 GRM	2850.0 GRM

Input data

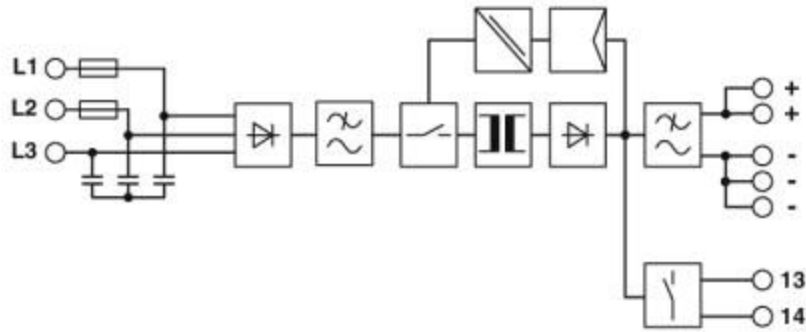
Nominal input voltage range	3x 400 V AC ... 500 V AC	3x 400 V AC ... 500 V AC	3x 400 V AC ... 500 V AC	3x 400 V AC ... 500 V AC
	2x 400 V AC ... 500 V AC	2x 400 V AC ... 500 V AC	2x 400 V AC ... 500 V AC	
Input voltage range	3x 400 V AC ... 500 V AC -20 %+15 %	3x 400 V AC ... 500 V AC -20 %+15 %	3x 400 V AC ... 500 V AC -20 %+15 %	3x 400 V AC ... 500 V AC -20 %+15 %

	2x 400 V AC ... 500 V AC -10 % ... +15 %	2x 400 V AC ... 500 V AC -10 % ... +15 %	2x 400 V AC ... 500 V AC -10 % ... +15 %	
AC frequency range	50 Hz ... 60 Hz	50 Hz ... 60 Hz	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Discharge current to PE	< 0.25 mA	< 3.5 mA	< 3.5 mA	< 3.5 mA
Current consumption	3x 0.4 A (400 V AC)	3x 0.6 A (400 V AC)	3x 1.2 A (400 V AC)	3x 1.9 A (400 V AC)
	3x 0.3 A (500 V AC)	3x 0.6 A (500 V AC)	3x 1 A (500 V AC)	3x 1.7 A (500 V AC)
	2x 0.6 A (400 V AC)	2x 1.1 A (400 V AC)	2x 2.3 A (400 V AC)	
	2x 0.5 A (500 V AC)	2x 1.1 A (500 V AC)	2x 1.9 A (500 V AC)	
Nominal power consumption	243.6 VA	451.7 VA	822.2 VA	1335.1 VA
Inrush surge current	≤ 22 A (typical)	≤ 26 A (typical)	≤ 22 A (typical)	≤ (typical)
Mains buffering	typ. 20 ms (400 V AC)	typ. 10 ms (400 V AC)	typ. 10 ms (400 V AC)	typ. 10 ms (400 V AC)
	typ. 20 ms (500 V AC)	typ. 20 ms (500 V AC)	typ. 20 ms (500 V AC)	typ. 20 ms (500 V AC)
Input fuse	3.15 A (internal (device protection), slow- blow)	3.15 A (internal (device protection), slow- blow)	3.15 A (internal (device protection), slow- blow)	6.3 A (internal (device protection))
Choice of suitable circuit breakers	6 A ... 16 A (Characteristics B, C, D, K)	6 A ... 16 A (Characteristics B, C, D, K)	6 A ... 16 A (Characteristics B, C, D, K)	10 A ... 16 A (Characteristics B, C, D, K)
Power factor (cos phi)	0.55	0.58	0.63	0.77
Type of protection	Transient surge protection	Transient surge protection	Transient surge protection	Transient surge protection
Protective circuit/component	Varistor	Varistor	Varistor	Varistor
Connection data, output				
Connection method	Push-in connection	Push-in connection	Push-in connection	Push-in connection
Conductor cross section solid min.	0.2 mm ²	0.2 mm ²	0.2 mm ²	0.75 mm ²
Conductor cross section solid max.	4 mm ²	4 mm ²	10 mm ²	16 mm ²

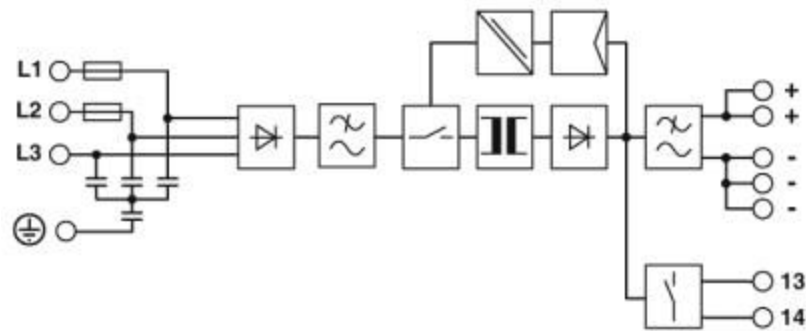
Conductor cross section flexible min.	0.2 mm ²	0.2 mm ²	0.2 mm ²	0.75 mm ²
Conductor cross section flexible max.	2.5 mm ²	2.5 mm ²	6 mm ²	10 mm ²
Conductor cross section AWG min.	24	24	24	20
Conductor cross section AWG max.	12	12	8	4
Stripping length	10 mm	10 mm	15 mm	18 mm
Ambient conditions				
Degree of protection	IP20	IP20	IP20	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C Derating: 2.5 %/K)	-25 °C ... 70 °C (> 60 °C Derating: 2.5 %/K)	-25 °C ... 70 °C (> 60 °C Derating: 2.5 %/K)	-25 °C ... 70 °C (> 60 °C Derating: 2.5 %/K)
Ambient temperature (storage/transport)	-40 °C ... 85 °C	-40 °C ... 85 °C	-40 °C ... 85 °C	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)	≤ 95 % (at 25 °C, non-condensing)	≤ 95 % (at 25 °C, non-condensing)	≤ 95 % (at 25 °C, non-condensing)
Climatic class	3K3 (in acc. with EN 60721)	3K3 (in acc. with EN 60721)	3K3 (in acc. with EN 60721)	3K3 (in acc. with EN 60721)
Degree of pollution	2	2	2	2
Installation height	≤ 5000 m (> 2000 m, Derating: 10 %/1000 m)	≤ 5000 m (> 2000 m, Derating: 10 %/1000 m)	≤ 5000 m (> 2000 m, Derating: 10 %/1000 m)	≤ 4000 m (> 2000 m, Derating: 10 %/1000 m)
Ambient temperature (start-up type tested)		-40 °C	-40 °C	-40 °C



Approvals

- DNV GL
- cULus Listed
- cULus Recognized
- EAC
- UL Recognized
- cUL Recognized
- cUL Listed
- IECEE CB Scheme
- UL Listed



TRIO 3-Phase Power Supplies Industrial Power Supply Block Diagram



Part Number	Product Name	3-Phase Input Voltage Range (V AC)	2-Phase Input Voltage Range (V AC)	Output Voltage (V DC)	Output Range (V DC)	Output Current (Amps)	Output Power (Watts)	Dimensions (W x H x D)	Additional Features
	TRIO-PS-2G/3AC/24DC/5	320 ... 575	360 ... 575	24	24 ... 28	5	120	35 x 130 x 115	-
29031538									
	TRIO-PS-2G/3AC/24DC/10	320 ... 575	360 ... 575	24	24 ... 28	10	240	42 x 130 x 160	-40 °C Startup
29031548									

29031558	TRIO-PS- 2G/3AC/24DC/20	320 ... 575	360 ... 575	24	24 ... 28	20	480	65 x 130 x 160	-40 °C Startup
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29031568	TRIO-PS- 2G/3AC/24DC/40	320 ... 575	-	24	24 ... 28	40	960	110 x 130 x 160	-40 °C Startup
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