

ESSENTIAL-PS/3AC/24DC/960W/EE - Power supply unit



1018294

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Primary-switched ESSENTIAL edition power supply for DIN rail mounting, input: 3-phase, output: 24 V DC / 960 W

Your advantages

- Worldwide use thanks to the wide range input and international approval package
- Fast installation, thanks to easy DIN rail mounting
- Greater availability, thanks to fanless convection cooling

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Technical data

Input data

AC operation

Nominal input voltage range	3x 400 V AC ... 500 V AC
Input voltage range	3x 320 V AC ... 575 V AC
Input voltage range AC	3x 320 V AC ... 575 V AC
Voltage type of supply voltage	AC
Inrush current	< 20 A
Inrush current integral (I^2t)	1.3 A ² s
AC frequency range	45 Hz ... 65 Hz
Mains buffering time	> 16 ms (3x 400 V AC)
Current consumption	3x 2 A (400 V AC) 3x 1.6 A (480 V AC)
Nominal power consumption	1149.27 VA
Protective circuit	Transient surge protection; Varistor
Typical response time	< 1 s
Recommended breaker for input protection	10 A ... 16 A (UL: 20 A)
Discharge current to PE	< 3.5 mA

Output data

Efficiency	91.5 % (at 400 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)	40 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
Active current limitation	approx. 42 A
Residual ripple	< 20 mV _{PP}
Short-circuit-proof	yes
Output power	960 W
Peak switching voltages nominal load	< 40 mV _{PP}
Maximum no-load power dissipation	11 W
Power loss nominal load max.	87 W
Connection in parallel	yes, for redundancy and increased capacity

Connection data

Input

Connection method	Screw connection
Conductor cross section, rigid min.	0.2 mm ²

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Conductor cross section, rigid max.	6 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	4 mm ²
Conductor cross section AWG min.	22
Conductor cross section AWG max.	10
Stripping length	8 mm
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

Output

Connection method	Screw connection
Conductor cross section, rigid min.	0.5 mm ²
Conductor cross section, rigid max.	16 mm ²
Conductor cross section flexible min.	0.5 mm ²
Conductor cross section flexible max.	10 mm ²
Conductor cross section AWG min.	8
Conductor cross section AWG max.	6
Stripping length	10 mm
Tightening torque, min	1.2 Nm
Tightening torque max	1.5 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

Number of phases	3.00
Insulation voltage input/output	3 kV AC (type test)
	1.5 kV AC (routine test)
Insulation voltage output / PE	500 V DC

Product properties

Product type	Power supply
Product family	ESSENTIAL POWER
MTBF (IEC 61709, SN 29500)	> 700000 h

Insulation characteristics

Protection class	I (with PE connection)
Degree of pollution	2

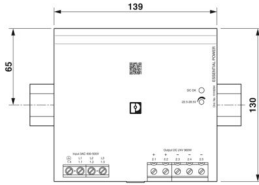
Dimensions

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Dimensional drawing	
Width	139 mm
Height	130 mm
Depth	190 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
With protective coating	No

Material specifications

Housing material	Metal
Housing material	Aluminum (AlMg3) / sheet steel, zinc-plated
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)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Shock	15g
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) 15 Hz ... 150 Hz, 2.3g, 90 min.

Standards and regulations

Standard - Electrical safety	EN 60950-1
Standard – Safety extra-low voltage	EN 60950-1 (SELV)
Approval - requirement of the semiconductor industry with regard to mains voltage dips	SEMI F47 - 0706 (200 V AC)

Approvals

CSA	CSA-C22.2 Nr. 107.1-01 CSA-C22.2 Nr. 60950-01
UL approvals	UL/C-UL listed UL 508

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Conformity/Approvals

SIL in accordance with IEC 61508	0
Performance level according to ISO 13849	without

EMC data

Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
EMC requirements for noise emission	EN 61000-6-3
	EN 61000-6-4
EMC requirements for noise immunity	EN 61000-6-1
	EN 61000-6-2
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011 (EN 55022) Class B

Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

Contact discharge	6 kV
Discharge in air	8 kV (Test Level 3)
Comments	Criterion B

Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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Electromagnetic HF field

Frequency range	80 MHz ... 1 GHz
Test field strength	10 V/m
Frequency range	1 GHz ... 2 GHz
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
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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
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Surge voltage load (surge)

Input	1 kV (Test Level 2 - symmetrical)
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	2 kV (Test Level 3 - asymmetrical)
Output	0.5 kV (Test Level 1 - symmetrical)
	0.5 kV (Test Level 1 - asymmetrical)
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	Test Level 3

Voltage dips

Standards/regulations	EN 61000-4-11
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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

Criteria

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

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