

TRIO-PS-2G/230AC-400DC/48DC/5 - Power supply unit



1157806

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Primary-switched TRIO power supply for DIN rail mounting, input: 230 V AC/400 V DC, output: 48 V DC / 5 A, dynamic boost, tool-free fast-connection technology for rigid and flexible conductors with ferrule

Product description

The TRIO POWER power supply with an input voltage of 230 V AC - 400 V DC features a wide input voltage range, parallel mode, high power density, and an extremely robust electrical and mechanical design. It is therefore ideal for infrastructure conversion, e.g., in railway technology.

Your advantages

- Voltage range for new DC applications
- High power density
- Improved load distribution
- Very cost-effective with time-saving, tool-free Push-in connection and a slim design
- Electrically robust, thanks to high electric strength
- Mechanically robust, thanks to high vibration and shock resistance

Commercial data

Item number	1157806
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	*****
Product key	CMPO14
GTIN	4063151162887
Weight per piece (including packing)	1,083.84 g
Weight per piece (excluding packing)	898 g
Customs tariff number	85044095
Country of origin	CN

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Technical data

Input data

AC operation

Supply system configuration	Star network (TN, TT, IT (PE))
Nominal input voltage range	220 V AC ... 240 V AC
Input voltage range	220 V AC ... 240 V AC -15 % ... +10 %
Switch-on voltage	typ. 70 V AC
Shut-down voltage	typ. 50 V AC
Electric strength, max.	≤ 300 V AC 15 s
Typical national grid voltage	230 V AC
Voltage type of supply voltage	AC
Inrush current integral (I^2t)	< 0.3 A ² s
Inrush current limitation	< 13.5 A (after 1 ms)
AC frequency range	50 Hz ... 60 Hz ±10 %
Mains buffering time	> 20 ms (190 V AC) > 20 ms (230 V AC)
Current consumption	1.3 A (230 V AC)
Nominal power consumption	285.7 VA
Power factor (cos phi)	0.91
Input fuse	3.15 A (internal (device protection))
Recommended breaker for input protection	4 A ... 16 A (Characteristic B, C, Z)
Discharge current to PE	< 3.5 mA < 1.7 mA (264 V AC, 60 Hz)
POWER factor	> 0.9 (230 V AC)

DC operation

Nominal input voltage range	220 V DC ... 400 V DC
Input voltage range	220 V DC ... 400 V DC -15 % ... +5 %
Derating	< 99 V DC (2 %/V)
Switch-on voltage	typ. 95 V DC
Shut-down voltage	typ. 50 V DC
Electric strength, max.	≤ 420 V DC
Voltage type of supply voltage	DC
Mains buffering time	> 20 ms (185 V DC) > 25 ms (400 V DC)
Current consumption	1.3 A (220 V DC) 0.7 A (400 V DC)

Output data

Efficiency	typ. 92.5 % (230 V AC) typ. 94 % (400 V DC)
Output characteristic	U/I with dynamic load reserve

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Nominal output voltage	48.5 V DC ± 1 %
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)
POWER factor	> 0.9 (120 V AC) > 0.9 (230 V AC)
Feedback voltage resistance	≤ 60 V DC
Protection against overvoltage at the output (OVP)	≤ 58 V DC
Control deviation	< 1.5 % (change in load, static 10 % ... 90 %) < 4 % (Dynamic load change 10 % ... 90 %, 10 Hz) < 0.1 % (change in input voltage ± 10 %)
Residual ripple	< 20 mV _{PP} (with nominal values)
Short-circuit-proof	yes
No-load proof	yes
Output power	240 W 360 W
Peak switching voltages nominal load	< 15 mV _{PP}
Maximum no-load power dissipation	typ. 4 W (230 V AC) typ. 4 W (400 V DC)
Power loss nominal load max.	typ. 20 W (230 V AC) typ. 15 W (400 V DC)
Short-circuit current	< 7 A DC (Permanent)
Rise time	20 ms (U_{OUT} (10 % ... 90 %))
Connection in parallel	yes, for redundancy and increased capacity

Signal: DC OK

Continuous load current	100 mA
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Signal relay 13/14

Default	closed
Digital	30 V AC 30 V DC 100 mA

Connection data

Input

Connection method	Push-in connection
Conductor cross section, rigid min.	0.2 mm ²
Conductor cross section, rigid max.	4 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.25 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	1.5 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.25 mm ²

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Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12

Output

Connection method	Push-in connection
Conductor cross section, rigid min.	0.2 mm ²
Conductor cross section, rigid max.	4 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.25 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	1.5 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.25 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12

Signal

Connection method	Push-in connection
Conductor cross section, rigid min.	0.2 mm ²
Conductor cross section, rigid max.	0.75 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	1.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.2 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	0.75 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.2 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	1 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	18

Signaling

Types of signaling	Floating signal contact
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Signal output: LED status indicator

Signalization designation	DC OK
Status display	LED
Color	green
DC OK	$U_{OUT} > 0.7 \times U_N$ ($U_N = 48$ V DC)

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Electrical properties

Number of phases	1.00
Insulation voltage input/output	3.5 kV AC (type test)
	1.5 kV AC (routine test)

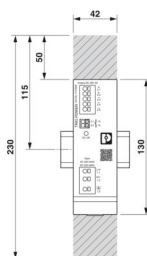
Product properties

Product type	Power supply
Product family	TRIO POWER
MTBF (IEC 61709, SN 29500)	> 2220000 h (25 °C)
	> 1280000 h (40 °C)
	> 560000 h (60 °C)
	> 2220000 h (25 °C)
	> 1280000 h (40 °C)
	> 560000 h (60 °C)

Insulation characteristics

Protection class	I (in closed control cabinet)
Degree of pollution	2

Dimensions

Dimensional drawing	
Width	42 mm
Height	130 mm
Depth	160 mm

Installation dimensions

Installation distance right/left	0 mm / 0 mm
Installation distance top/bottom	50 mm / 50 mm

Mounting

Mounting type	DIN rail mounting
Assembly note	alignable: horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
With protective coating	no

Material specifications

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Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Metal
Type of housing	Aluminum (AlMg3)
Hood version	Polycarbonate

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (>60°C derating: 1.6%/K)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Ambient temperature (start-up type tested)	-40 °C
Maximum altitude	≤ 2000 m
Climatic class	3K3 (EN 60721)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Shock	20 m/s ² (2g), 11 ms, ± 100 Schocks (DIN EN 50125-3, DIN EN 60068-2-27)
Vibration (operation)	5 Hz ... 2 kHz, 2.3 m/s ² (0.23g) (RMS) 5 h (DIN EN 50125-3, DIN EN 60068-2-64)

Standards and regulations

Rail applications	EN 50121-3-2
	EN 50121-4
	EN 50124-1
	EN 50125-3
	IEC 62236-3-2
	IEC 62236-4
	IEC 62236-5
Standard – Limitation of mains harmonic currents	EN 61000-3-2
Standard - Electrical safety	EN 61010-1
	VDE 0805 (SELV)
Standard – Safety extra-low voltage	IEC 61010-1 (SELV)
	IEC 61010-2-201 (PELV)
Standard - Safe isolation	IEC 61010-2-201
	IEC 61558-2-16
Standard - Safety of power supply units up to 1100 V (insulation distances)	DIN EN 61558-2-16

Overvoltage category

EN 62477-1	II (≤ 2000 m)
	III (≤ 2000 m)

Approvals

UL approvals	UL 61010-1
	UL 61010-2-201

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Conformity/Approvals

SIL in accordance with IEC 61508	0
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EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
Interference emission	Interference emission in accordance with EN 61000-6-3 (residential and commercial) and EN 61000-6-4 (industrial)
EMC requirements for noise immunity	EN 61000-6-1
	EN 61000-6-2

Conducted noise emission

Standards/regulations (Higher requirements in practice (covered))	EN 55016
	EN 61000-6-3 (Class B)
Noise emission	EN 55011 (EN 55022)
Noise emission ()	EN 55016
	EN 61000-6-3 (Class B)

Harmonic currents

Standards/regulations	EN 61000-3-2
Frequency range	Class A

Flicker

Standards/regulations	EN 61000-3-3
Frequency range	0 kHz ... 2 kHz

Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

Contact discharge	6 kV (Test Level 4)
Discharge in air	8 kV (Test Level 4)
Comments	Criterion A

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	20 V/m (Test Level 3)
Frequency range	1 GHz ... 2 GHz
Test field strength	10 V/m (Test Level X)
Frequency range	2 GHz ... 2.7 GHz
Test field strength	10 V/m (Test Level 3)
Comments	Criterion A

Fast transients (burst)

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Standards/regulations	EN 61000-4-4
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Fast transients (burst)

Input	4 kV (Test Level 4 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)
Signal	2 kV (Test Level 4 - 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 1 - symmetrical)
	2 kV (Test Level 1 - asymmetrical)
Output	0.5 kV (Test Level 1 - symmetrical)
	0.5 kV (Test Level 1 - asymmetrical)
Signal	0.5 kV (Test Level 2 - asymmetrical)
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

I/O/S	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V (Test Level 3)

Voltage dips

Standards/regulations	EN 61000-4-11
Voltage	230 V AC
Frequency	50 Hz
Voltage dip	70 %
Number of periods	25 periods
Additional text	Test Level 2
Comments	Criterion A
Voltage dip	40 %
Number of periods	10 periods
Additional text	Test Level 2
Comments	Criterion A
Voltage dip	0 %
Number of periods	1 period
Additional text	Test Level 2
Comments	Criterion A

Emitted interference

Standards/regulations	EN 61000-6-3
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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.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements.

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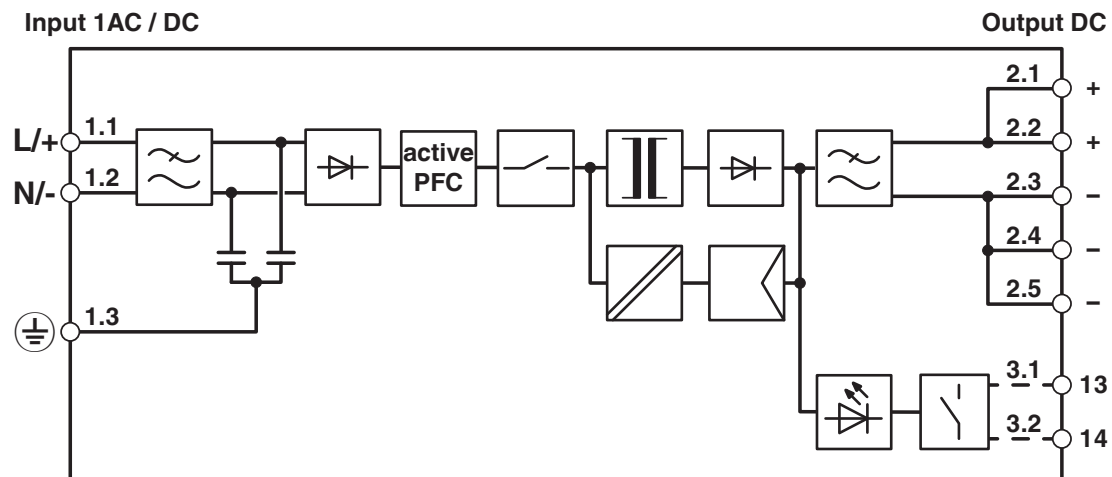


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Drawings

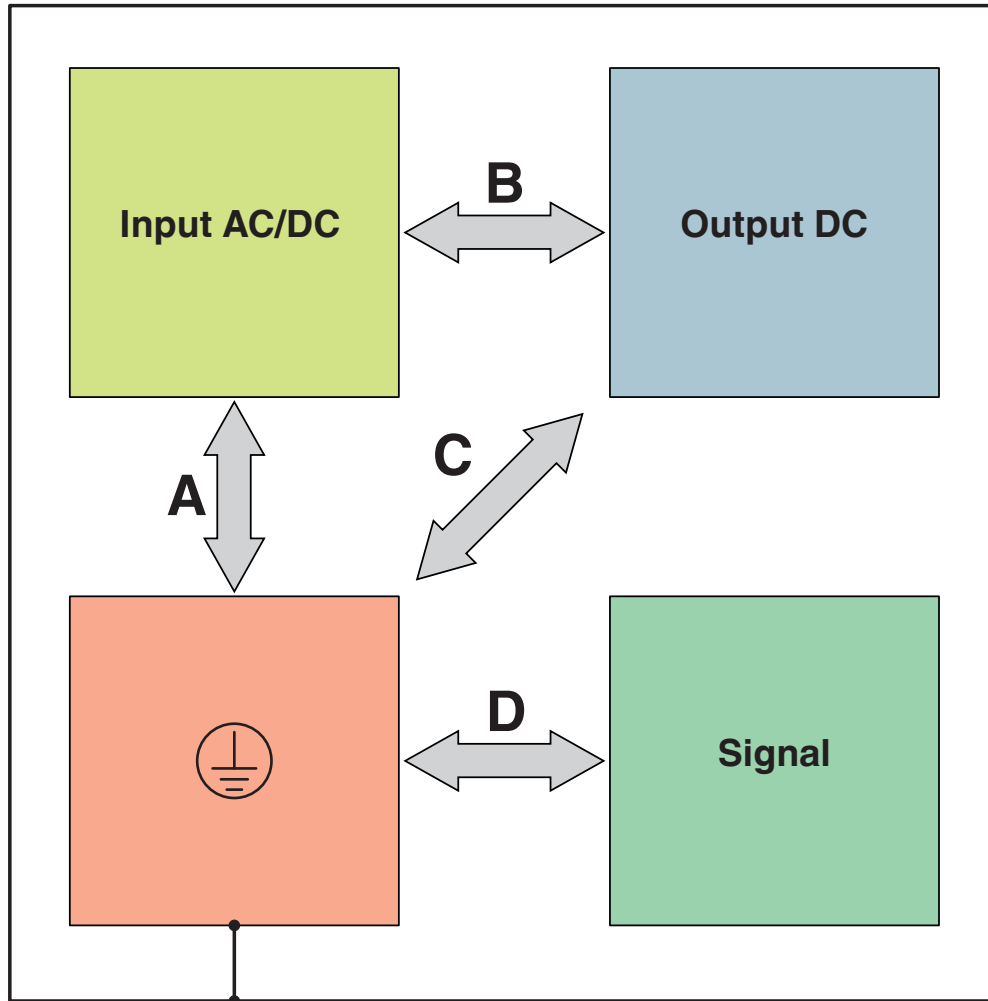
Block diagram



Block diagram

Schematic diagram

Housing



Test sections, insulation voltage

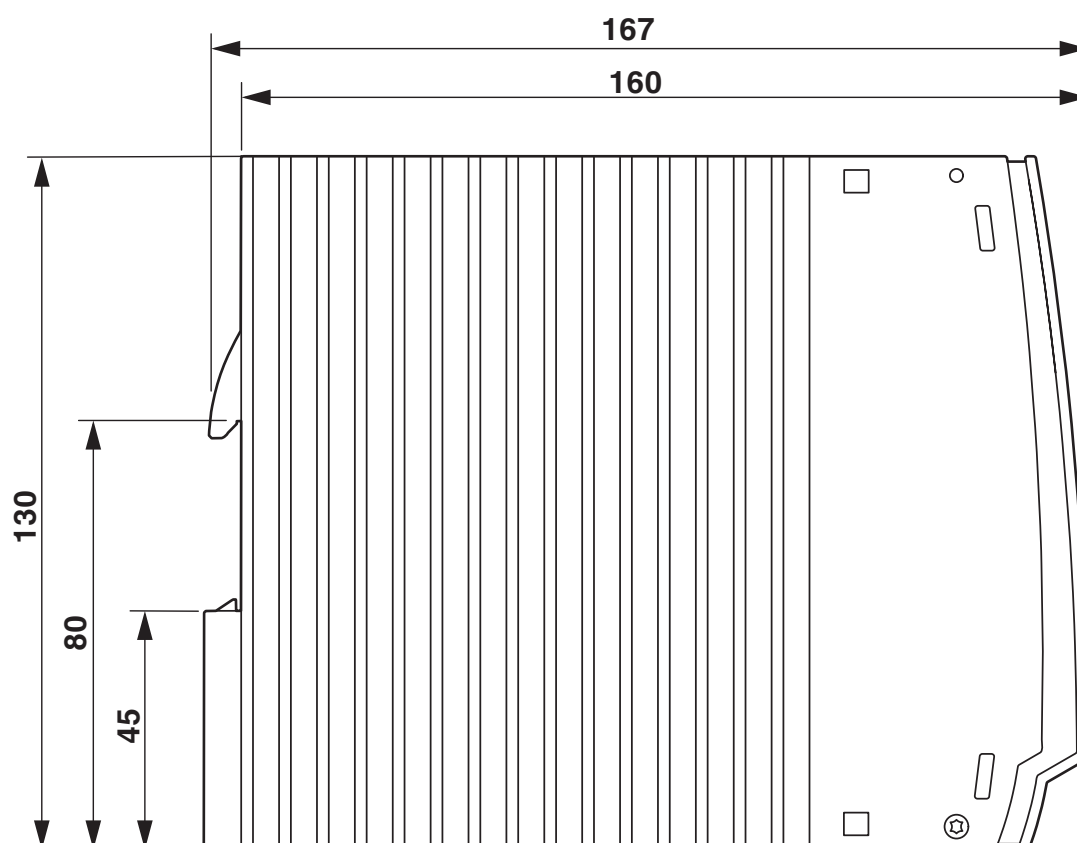
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Dimensional drawing



Device dimensions (dimensions in mm)

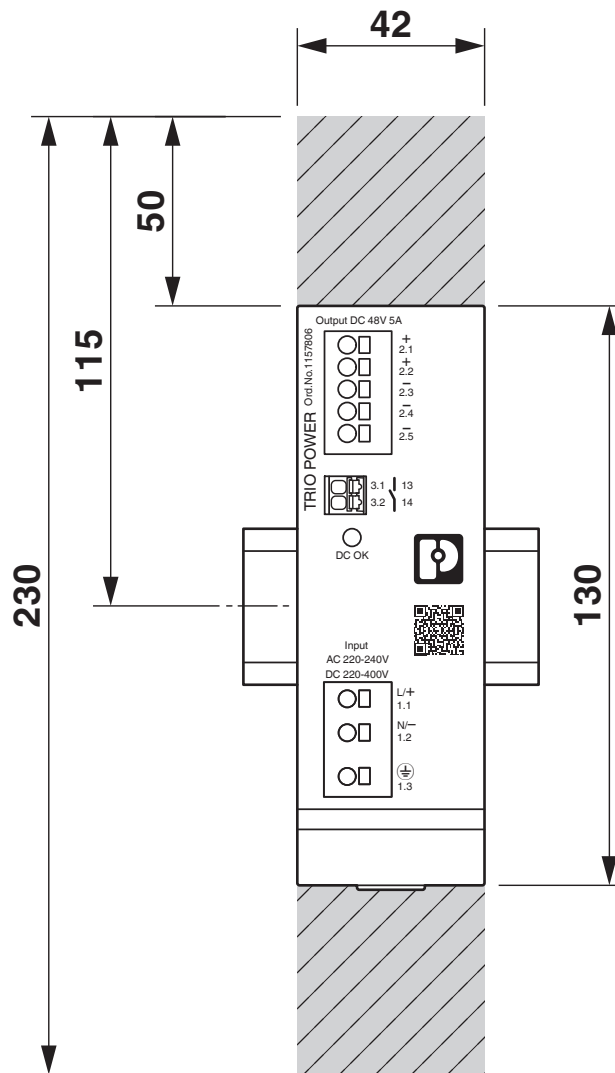
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Dimensional drawing



Device dimensions (dimensions in mm)

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Approvals

📄 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/1157806>



IECEE CB Scheme

Approval ID: SI-8695



cULus Listed

Approval ID: FILE E 123528

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Classifications

ECLASS

ECLASS-11.0	27040701
ECLASS-12.0	27040701
ECLASS-13.0	27040701

ETIM

ETIM 9.0	EC002540
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-25
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1)
SCIP	20b4e807-89ca-4c6d-a64d-94254a69237e

EF3.0 Climate Change

CO2e kg	33.08 kg CO2e
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Accessories

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

2315269

<https://www.phoenixcontact.com/in/products/2315269>



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

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

2903798

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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

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PLT-SEC-T3-230-FM-PT - Type 3 surge protection device

2907928

<https://www.phoenixcontact.com/in/products/2907928>



Type 2/3 surge protection, consisting of protective plug and base element with Push-in connection. For single-phase power supply network with integrated status indicator and remote signaling. Nominal voltage: 230 V AC/DC

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