TRIO-HP/3AC/1KDC/20KW/BI - AC/DC power module

1560712

https://www.phoenixcontact.com/gb/products/1560712

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CRA-READY



TRIO POWER, bidirectional AC/DC power module with 20 kW output power, Push-in connection, 19″ rack mounting, CAN bus, input: 3-phase, output: 50 V DC ... 1000 V DC or input: DC, output: 3 x 380 V AC ... 480 V AC. Product is being prepared for compliance with the Cyber Resilience Act (CRA).

Product description

The highly efficient power electronics system for 19" rack mounting from Phoenix Contact features a high degree of investment security. It enables the cost-effective charging and discharging of your battery storage applications. The modular and scalable system is optimized for bidirectional power conversion with high voltages and currents. By combining several modules, an output power of up to 960 kW is possible.

Your advantages

- Max. 97% efficiency: slight losses during current conversion
- Grid feed-in function
- Scalable system with output power of up to 960 kW possible
- Modular and flexible for various applications
- Widely varying voltage field

Commercial data

Item number	1560712
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CMHT3J
Product key	CMHT3J
GTIN	4067923042506
Weight per piece (including packing)	26,400 g
Weight per piece (excluding packing)	24,100 g
Customs tariff number	85044095
Country of origin	CN

Technical data

Notes

Note on application

Note on application	As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA.

Input data

AC/DC Mode Power grid

Input voltage range	3x 260 V AC ... 530 V AC
Derating	3x 309 V AC ... 260 V AC (180 W/V)
Frequency range	50 Hz ... 60 Hz ±10 %
Input current range	3x 0 A ... 38 A
Inrush current limitation	50 A
Power factor	> 0.99 (50% ... 100% output load)
Total distortion (THDi)	< 5 % (50% ... 100% output load)
Supply system configuration	Star network (TN-S, TN-C, TT, IT)

DC/AC Mode On-grid

Input voltage range	200 V DC ... 1000 V DC
Derating	273 V DC ... 200 V DC (123 W/V)
Input current range	0 A ... 73 A

Output data

Efficiency	> 96 % (P_{Out} >50%)

AC/DC-Mode

Output voltage range	50 V DC ... 1000 V DC
Derating	50 V DC ... 273 V DC (74 W/V)
Output current range	0 A ... 73 A
Nominal power	20 kW
Power dissipation standby	< 20 W
Derating	> 55 °C (1.4 A/K)
Connection in parallel	48 (Modules)
Switch-over time	10 ms (Change of operating mode)
Power factor	> 0.8 ... 1 (leading and lagging)

DC/AC Mode On-grid

Output voltage range	3x 380 V AC ... 480 V AC
Output current range	0 A ... 38 A
Output power	max. 20 kVA (Nominal power)
	22 kVA (Apparent power)
Output frequency	50 Hz ... 60 Hz ±10 %

Connection in parallel	48 (Modules)
Switch-over time	10 ms (Operating mode change DC/AC mode on-grid ↔ AC/DC mode)
Power factor	0.8 ... 1 (leading and lagging)
Power grid AC connection	L1, L2, L3, PE

DC/AC Mode Off-grid

Output voltage	3x 380 V AC
	3x 400 V AC
	3x 480 V AC
Output power	max. 19.8 kVA (Nominal power)
	22 kVA (Apparent power)
Output frequency	50 Hz (3x 380 V AC / 3x 400 V AC)
	60 Hz (3x 480 V AC)
Connection in parallel	8 (Modules)
Switch-over time	15 s (Operating mode change DC/AC mode (off-grid) ↔ AC/DC mode)
Power factor	0.8 ... 1 (leading and lagging)
Total harmonic distortion factor (THD)	< 3 %
Power grid AC connection	L1, L2, L3, N, PE

Connection data

AC connection

Designation	AC connection
Identification	L1 / L2 / L3 / N / PE

Conductor connection

Connection method	Push-in connection
rigid	1.5 mm² ... 16 mm²
flexible	1.5 mm² ... 16 mm²
rigid (AWG)	15 ... 5
AWG	15 ... 5
Stripping length	18 mm (rigid/flexible)

DC connection

Designation	DC connection
Identification	DC+ / DC-

Conductor connection

Connection method	Push-in connection
rigid	1.5 mm² ... 16 mm²
flexible	1.5 mm² ... 16 mm²
rigid (AWG)	15 ... 5
AWG	15 ... 5
Stripping length	18 mm

Interfaces

Interface	CAN bus
Number of interfaces	1
Connection method	2x RJ45
Supported protocols	CAN 2.0B
Locking	Locking clip
Transmission physics	wired
Topology	Daisy Chain
Transmission speed	125 kbps
Termination resistor	120 Ω (Terminating the end device)

Electrical properties

Number of phases	3
Electrical isolation between input and output	yes
Insulation voltage input/output	2121 V DC (60 s)
Insulation voltage input, output / housing	2121 V DC (60 s)

Product properties

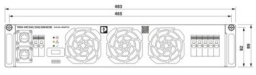
Product type	DC power module
Product family	TRIO POWER
Surge protection	yes
MTBF (IEC 61709, SN 29500)	> 300000 h
Internal fan	yes
Volumetric flow	400 m³/h (per module)
Flow direction	from front to back

Insulation characteristics

Protection class	I
Overvoltage category (IEC 60664-1)	II
Pollution degree	2

Dimensions

Item dimensions

Width	483 mm
Height	89 mm
Depth	520 mm
Dimensional drawing	
Rack unit	2 U

Mounting

Mounting type	19" rack mounting

Material specifications

Housing material	Zn-Al alloy

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Maximum altitude	2000 m
Permissible humidity (operation)	≤ 95 % (non-condensing)
Noise level	< 70 dB (1 m, U_{DC} ≥ 400 V)

Standards and regulations

Safety requirements for power electronic converter systems and equipment - Part 1: General

Standard designation	Safety requirements for power electronic converter systems and equipment - Part 1: General
Standards/specifications	IEC 62477-1

Power generation systems connected to the low-voltage distribution network – Technical minimum requirements for the connection to and parallel operation with low-voltage distribution networks

Standard designation	Power generation systems connected to the low-voltage distribution network – Technical minimum requirements for the connection to and parallel operation with low-voltage distribution networks
Standards/specifications	VDE-AR-N 4105 (DE)

Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources

Standard designation	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
Standards/specifications	UL 1741
	UL 1741 SB

Bidirectional grid-connected power converters

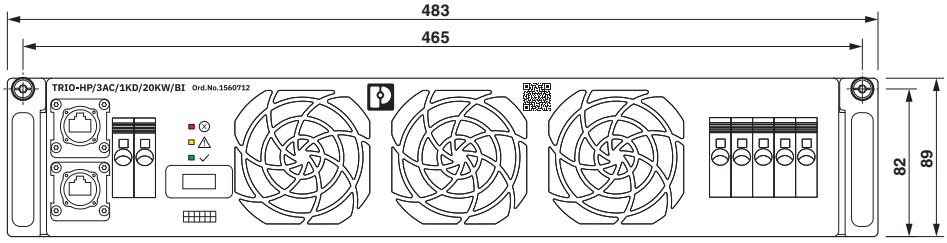
Standard designation	Bidirectional grid-connected power converters
Standards/specifications	IEC 62909-1
	IEC 62909-2
Standard designation	Requirements for power generation systems intended for parallel operation with a distribution grid
Standards/specifications	EN 50549-1

EMC data

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

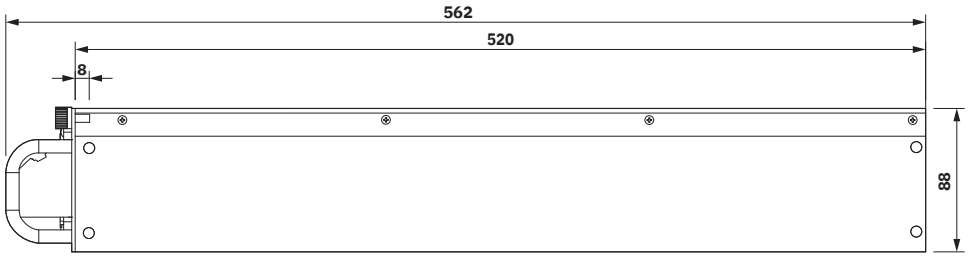
Drawings

Dimensional drawing



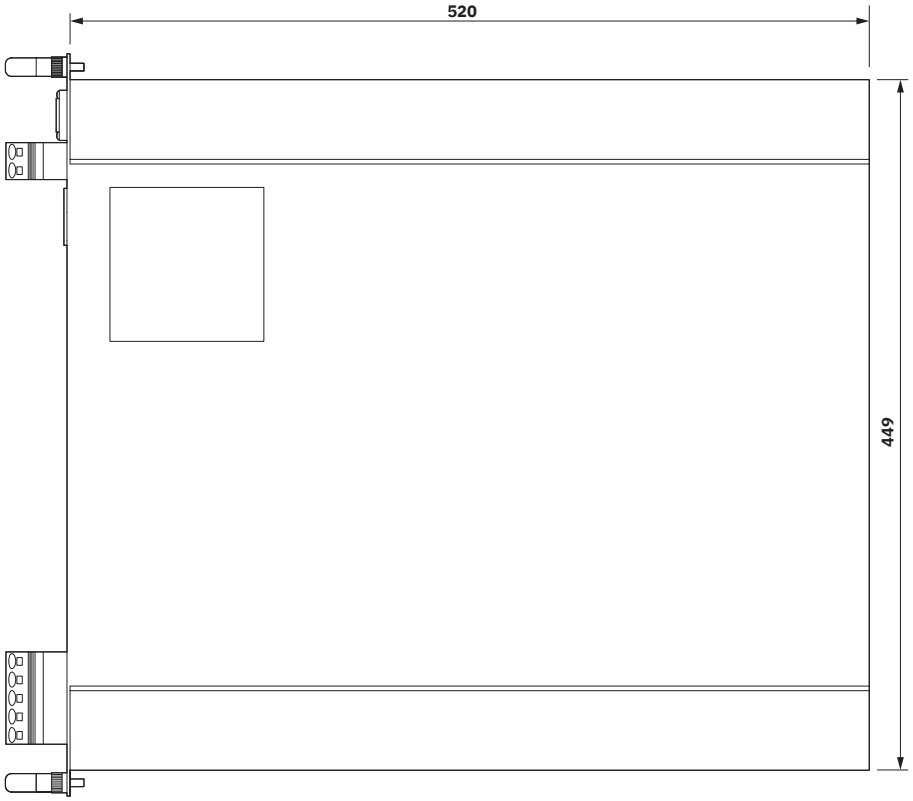
Device dimensions (dimensions in mm)

Dimensional drawing



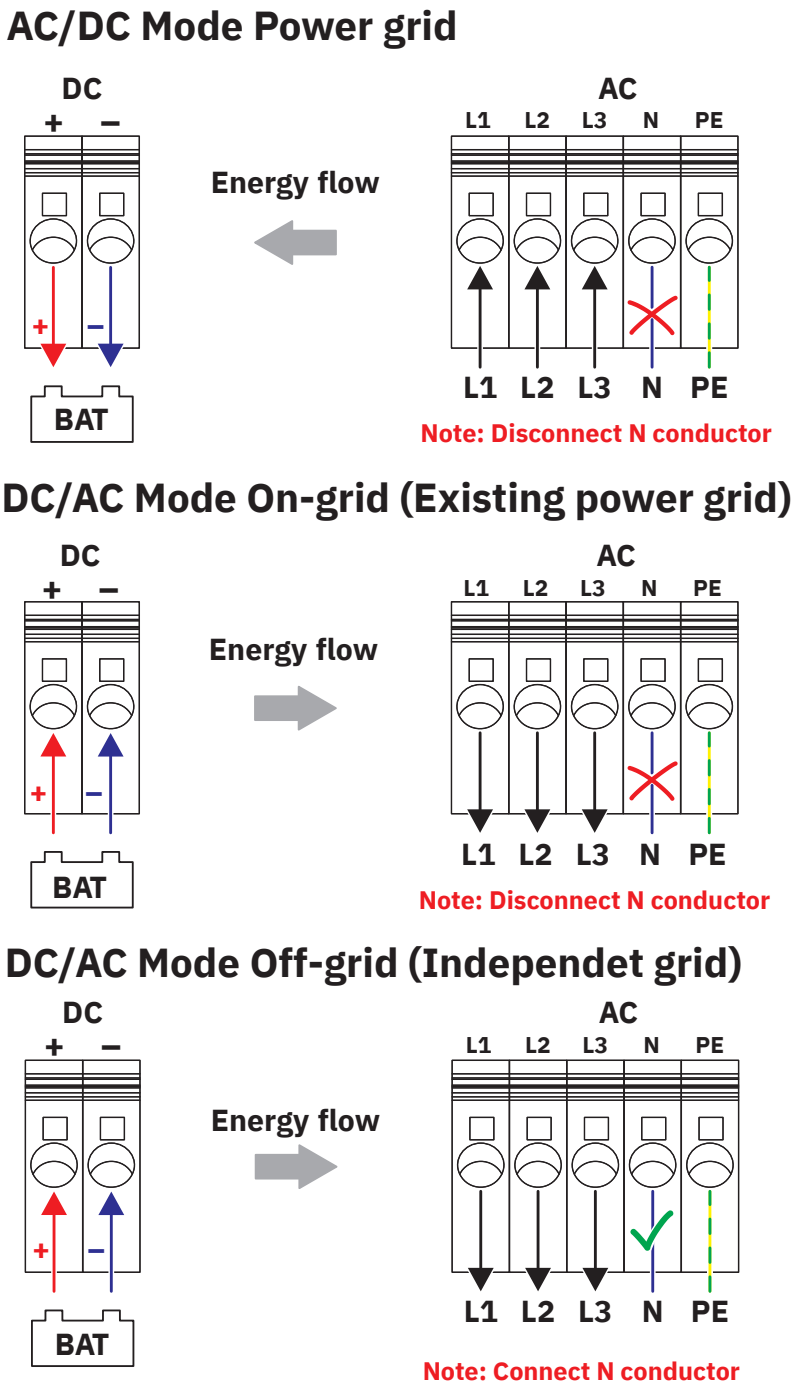
Device dimensions (dimensions in mm)

Dimensional drawing



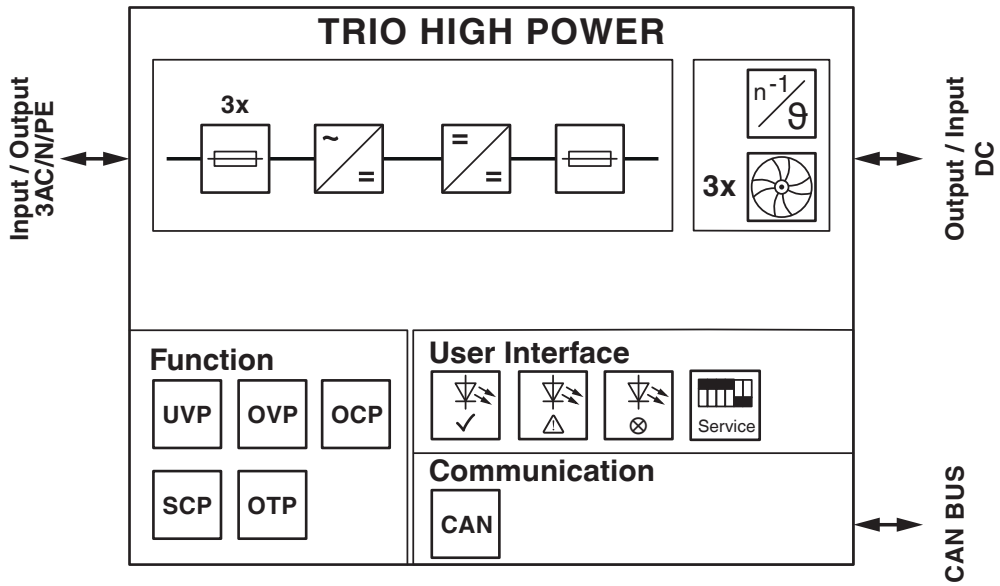
Device dimensions (dimensions in mm)

Schematic diagram



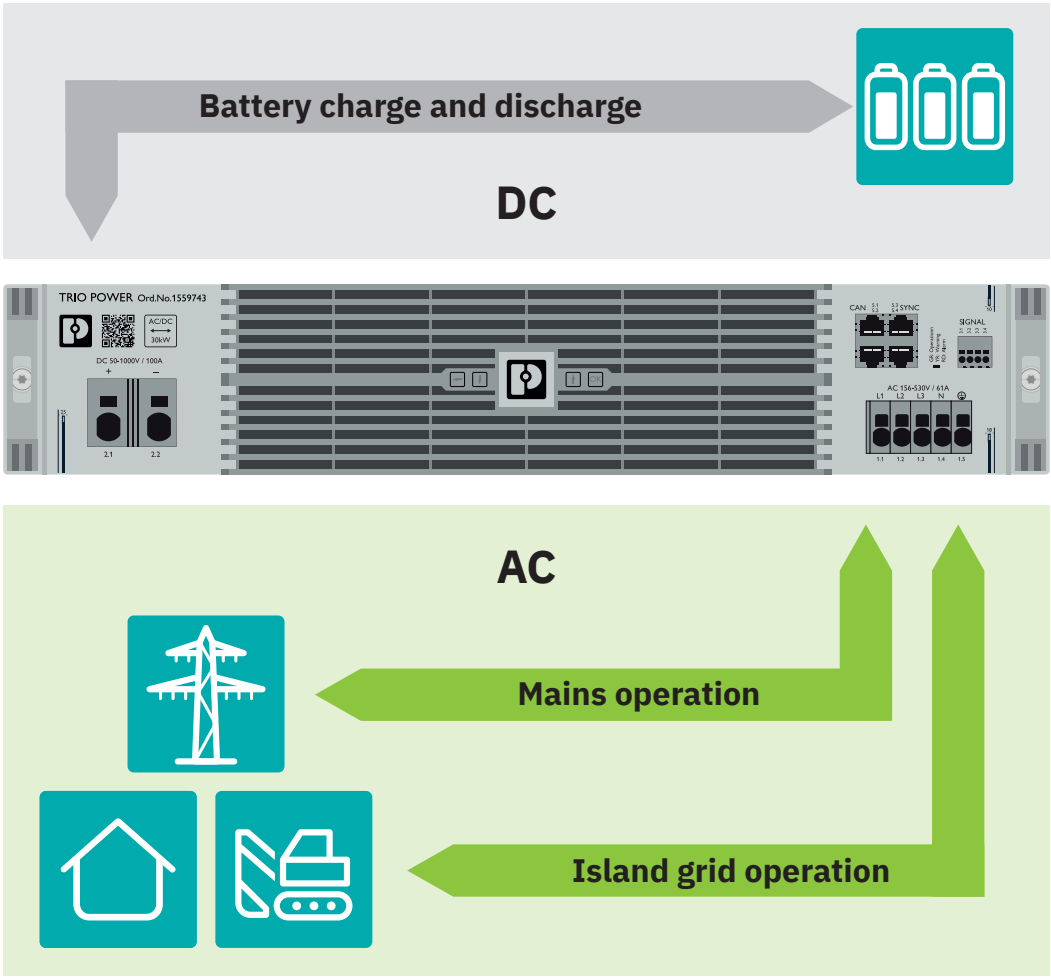
Operating modes

Block diagram



Block diagram

Graphic



Bidirectional charging

Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/gb/products/1560712

TÜV SÜD Type tested
Approval ID: B 029429 0045 Rev.01

EU-Type Examination Certificate
Approval ID: N8A 029429 044 R.01

Classifications

ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	27040701

ETIM

ETIM 10.0	EC002540

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions

China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%

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