INPPCS-100/0.4-W-C1-OS

Series Product Specifications

Langfang IN-Power Electric Co., Ltd.

Table of Contents

Langfang IN-POWER Electric Co., Ltd.

Address: No. 68, Hehua Road, Guangyang District, Langfang City, Hebei Province

Company website: http://www.in-power.net/

E-MAIL: info@in-power.net

Customer service center hotline: +086-010-63805588

Tel: +086-010-63805588

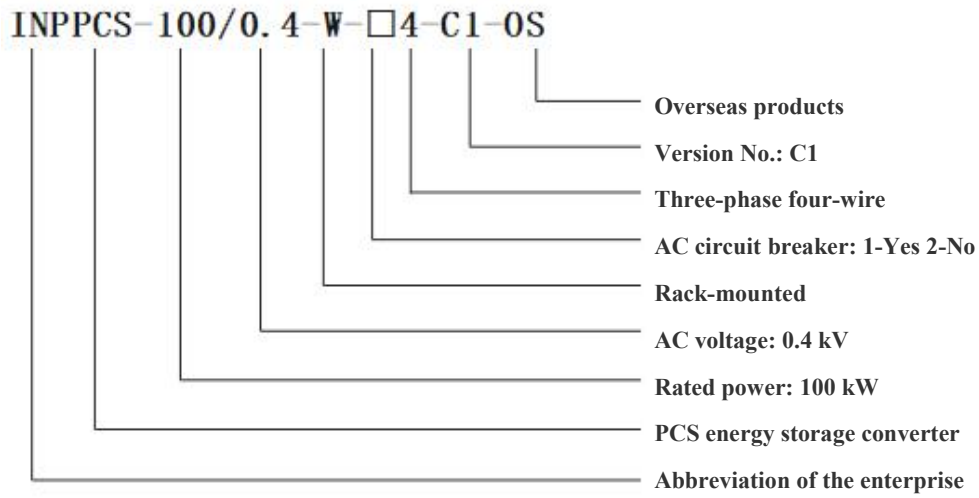
Fax: +086-010-82600608

1. Product Introduction

1.1 Product introduction

This product is a modular converter with a rated power of 100 kW, specifically designed for compact energy storage systems. It is the core power conversion unit in energy storage devices and adopts a three-level topological structure, allowing bidirectional energy flow and a wide range of battery voltage. It collaborates with a variety of batteries to fulfill the needs of different application scenarios, featuring flexible and easy installation and use.

1.2 Model description



The following product models apply to this specification:

1. INPPCS-100/0.4-W-14-C1-OS

2. INPPCS-100/0.4-W-24-C1-OS

2. Requirements that the Product Meets

This energy storage converter meets the following requirements:

IEC-62477	Safety requirements for power electronic conversion systems and equipment
IEC-61000	Electromagnetic Compatibility (EMC)

3. Funtions of Model

3.1 Basic functions

(1) The PCS converter realizes AC/DC conversion between the power grid and the battery, and completes bidirectional energy flow;

(2) It adopts a three-phase four-leg topology and can control the single-phase, three-phase active, and reactive power;

(3) It supports multi-machine parallel connections with good scalability;

(4) It supports active and reactive power regulation;

3.2 Advanced functions

The PCS, in conjunction with the EMS controller, enables the following advanced application functions:

(1) Peak load shaving: The EMS controller calculates the power expected value of the PCS according to the historical curve or the real-time load curve, and the PCS output responds to the power value to realize the function of "peak load shaving";

(2) PCS module charging and discharging control function: the EMS controller can determine the charging and discharging state of the PCS module and the charging and discharging current according to certain control strategies and the battery information returned by the BMS; the PCS can receive and execute the charging and discharging instructions sent by the EMS controller, and it also can receive the BMS instructions.

(3) Reactive power regulation: The PCS module can adjust the reactive power output according to the control commands by the EMS controller, and the reactive power regulation does not exceed the range of the apparent power of the PCS module.

(4) The response characteristics when the frequency is abnormal: the inverter can withstand system frequency abnormalities to a certain extent.

(5) PCS protection function: PCS provides real-time fault protection based on the voltage and frequency at the grid-connecting side and the operating status itself, including:

Overvoltage and undervoltage protection of the power grid

High and low frequency protection of the power grid

DC overvoltage/undervoltage protection

DC overcurrent protection

DC polarity reverse protection

AC overcurrent protection

Overtemperature protection

Phase loss protection

Anti-islanding protection

AC incoming phase sequence error protection

Communication fault protection

Protection according with IGBT

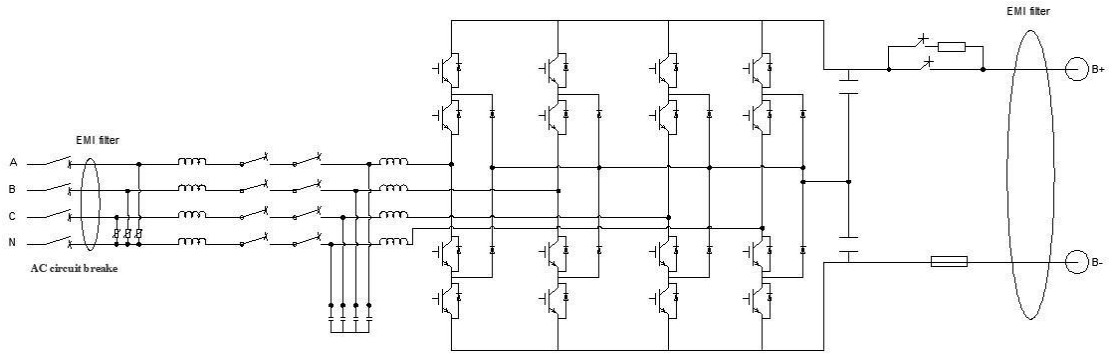
Cooling system protection

Have emergency stop protection function

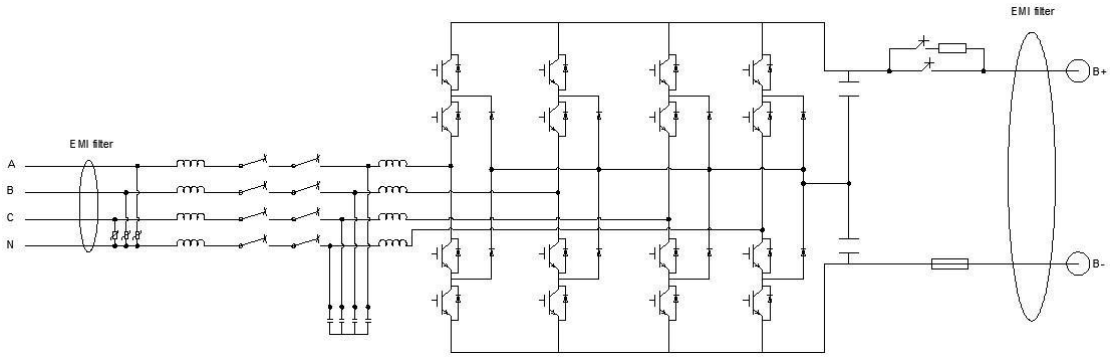
Feedback the battery fault information protection based on BMS

4. PCS Parameters

4.1 Topology for modules



INPPCS-100/0.4-W-14-C1-OS



INPPCS-100/0.4-W-24-C1-OS

EMI filter

Option EMI filter

4.2 Environmental conditions

- Operating ambient temperature: -25°C-+60°C (derating required for temperatures higher than 45°C)
- Relative humidity: 5%-95%, no condensation
- Sea level of installation: <3,000 m (>2,000 m needs to be derated)
- Corrosion-proof grade: C1
- Electrical safety grade: Class I
- Shell protection grade: IP20
- Pollution degree: PD2

4.3 Module technical parameters

Table 1 Technical Parameters

Model		INPPCS-100/0.4-W-14- C1-OS	INPPCS-100/0.4-W-24- C1-OS
DC Side	Max. DC voltage [Vd.c.]	900	900
	Min. DC voltage [Vd.c.]	630	630
	DC voltage range [Vd.c.]	630 V-900V	630 V-900V
	Max. DC current [Ad.c.]	175	175
	Rated DC power [kW]	100	100
	rated apparent power [kW]	100	100
	starting voltage [Vd.c.]	630	630
	Max. DC power [kW]	110	110
	Rated conditional short- circuit current [Ad.c.]	30kA	30kA
	Maximum short circuit current rating .	10kA	10kA
	Overvoltage Category(OVC)	II	II
AC Side (Grid)	AC rated Input /Output active Power P_E [kW]	100	100
	AC rated Input /Output apparent Power P_E [kVA]	100	100
	Max. AC Input/Output current [Aa.c.]	160	160
	Nominal AC voltage Ur [Va.c.]	3L/N/PE, 400/230	3L/N/PE, 400/230
	AC voltage tolerance	-15%-+15%	-15%-+15%

	Nominal frequency/Frequency F_{NETZ} [Hz]	50 /60	50 /60
	Harmonic (THDi)	≤5% (at nominal Power), Linear load	≤5% (at nominal Power), Linear load
	Power factor	-0.99-+0.99, At nominal Power	-0.99-+0.99, At nominal Power
	Adjustable reactive Power range	-100%-100%	-100%-100%
	Overvoltage Category(OVC)	III	III
AC Side (Off-Grid)	Nominal AC voltage Ur [Va.c.]	3L/N/PE, 400 /230	3L/N/PE, 400 /230
	AC voltage tolerance	AC 400 V ± 3%	AC 400 V ± 3%
	AC rated Input /Output apparent Power P_E [kVA]	100	100
	Max. AC Input/Output current [Aa.c.]	160	160
	Harmonic THDu	≤3%, Linear load	≤3%, Linear load
	DC voltage component	<0.5% , Linear load	<0.5% , Linear load
	Unbalance load capacity	100%	100%
	Nominal frequency/Frequency F_{NETZ} [Hz]	50 /60	50 /60
Other	Max. efficiency	≥98%(at nominal Power)	≥98%(at nominal Power)
	Communication	RS485, CAN, Ethernet	RS485, CAN, Ethernet
	Enclosure Dimensions (W * H * D)	480 mm × 260 mm × 620 mm, (Cabinet size), 480 mm × 260 mm × 720 mm(with circuit breaker size)	480 mm × 260 mm × 620 mm, (Cabinet size)
	Weight	70kg	70kg
	Degree of protection	IP20	IP20
	Operating ambient temperature [° C]	-25-60 (>45 derating)	-25-60 (>45 derating)
	Allowable relative humidity	RH ≤95%	RH ≤95%

	Cooling method	Forced air cooling	Forced air cooling
	Max. operating altitude	4,000 m (>2,000 m derating)	4,000 m (>2,000 m derating)
	Pollution degree	2	2
	country of manufacture	China	China
	Active anti-islanding method	Frequency shift	Frequency shift
	Inverter topology	transformer less	transformer less
	battery type	lithium-ion battery	lithium-ion battery
	Service environment	Industrial environment	industrial environment

4.4 Exterior view of the module

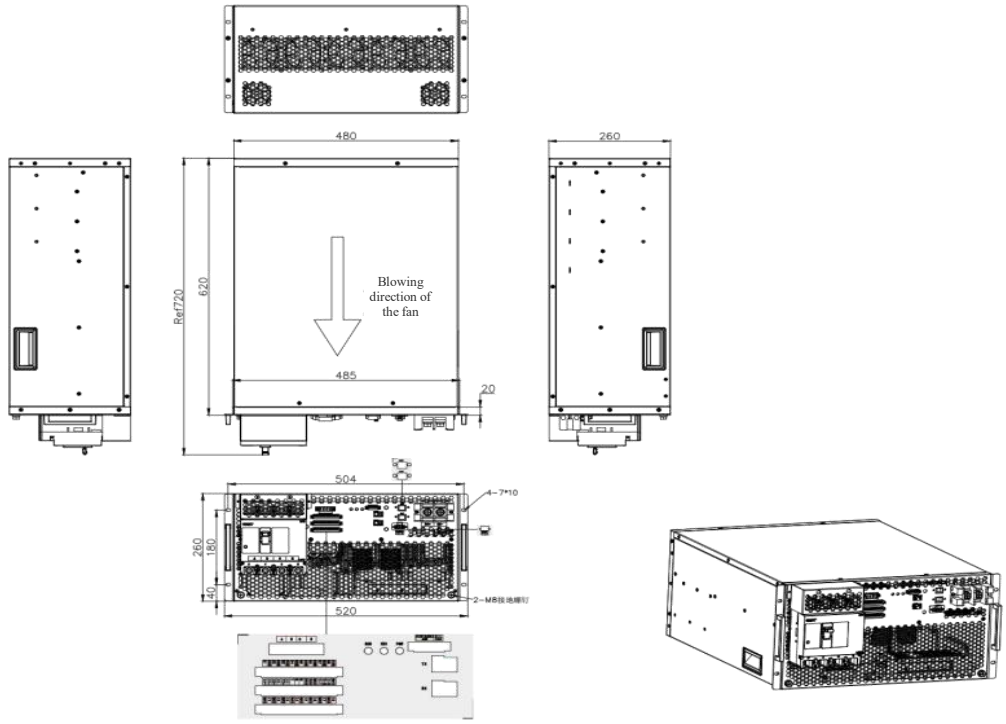
INPPCS-100/0.4-W-14-C1-OS

(Primary terminal, secondary terminal front panel, rear air inlet and front air outlet)

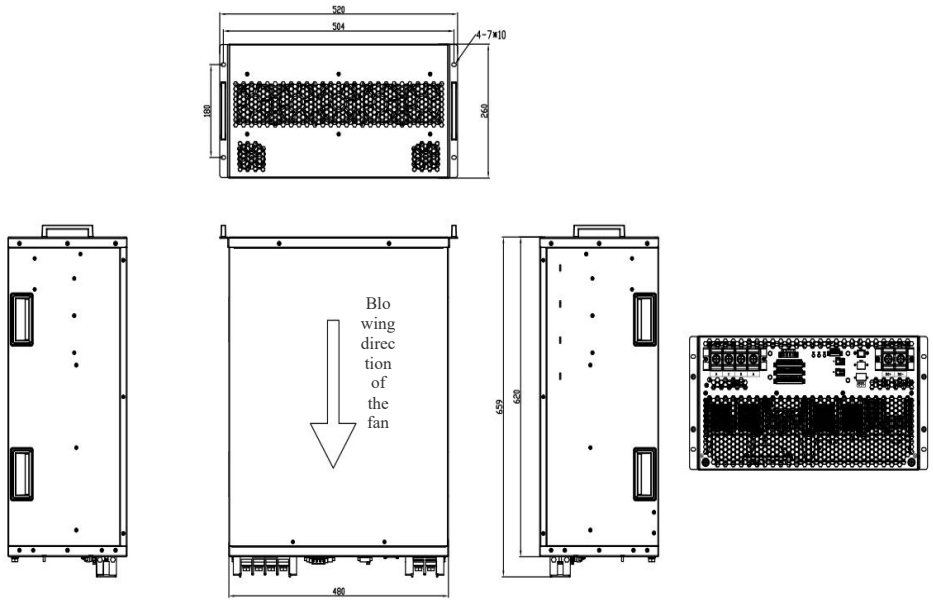
INPPCS-100/0.4-W-24-C1-OS

(Primary terminal, Secondary terminal rear panel, no-AC circuit breaker, front air inlet and rear air outlet)

4.5 Dimensional drawing of the module



INPPCS-100/0.4-W-14-C1-OS



INPPCS-100/0.4-W-24-C1-OS