

INPPCS-100/0.4-W-C1-OS Series
Product Specifications

Beijing IN-Power Electric Co., Ltd.



Table of Contents

1.	Product Introduction	2
2.	Requirements that the Product Meets	3
3.	Funtions of Model	3
3.1	Basic functions	3
3.2	Advanced functions	3
4.	PCS Parameters	5
4.1	Topology for modules	5
4.2	Environmental conditions	5
4.3	Module technical parameters	6
4.4	Exterior view of the module	8
4.5	Dimensional drawing of the module	9

Beijing IN-Power Electric Co., Ltd.

Address: No. 118, 1st Floor Podium, No. 69 Zizhuyuan Road,
Haidian District, Beijing

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

E-MAIL: info@in-power.net

Customer service center

hotline: +086-010-63805588

Tel: +086-010-63805588

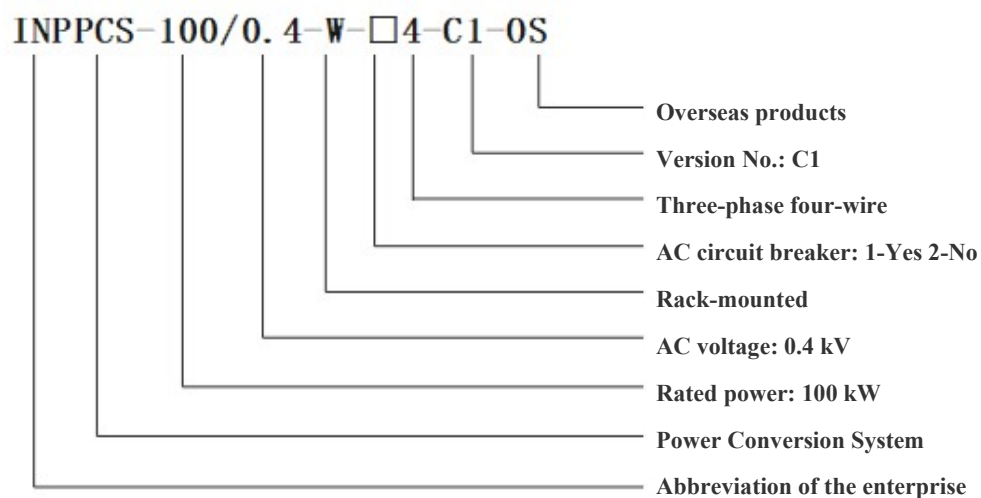
Fax: +086-010-82600608

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 Power Conversion System meets the following requirements:

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

3. Functions 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

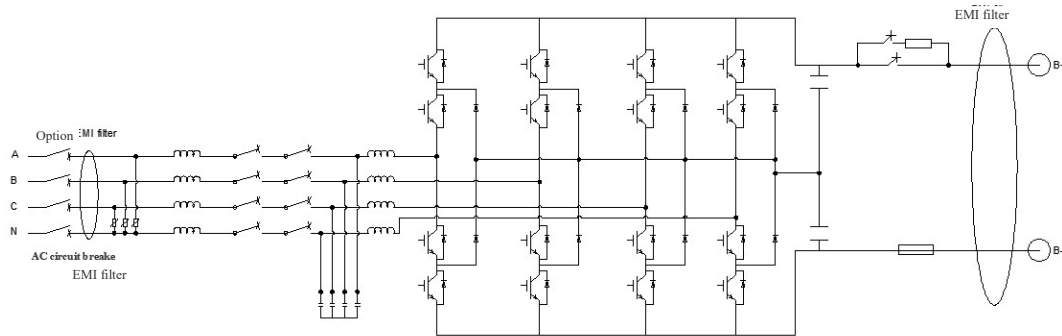
Cooling system protection

Have emergency stop protection function

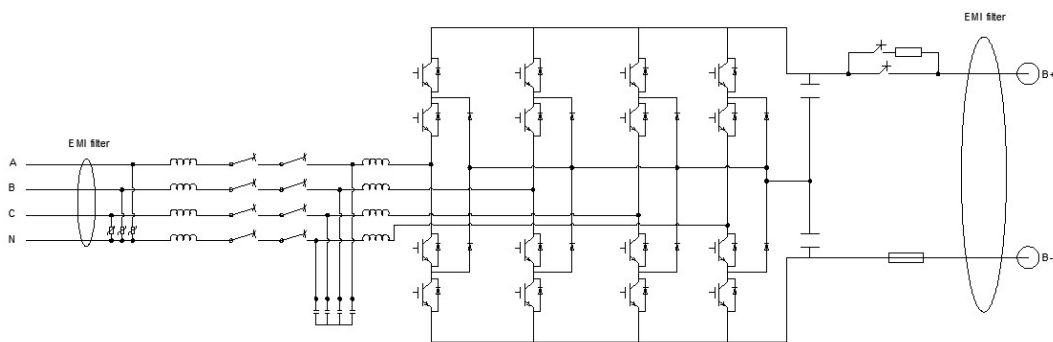
Feedback the battery fault information protection based on BMS

4. PCS Parameters

4.1 Topology for modules



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



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

4.2 Environmental conditions

- Operating ambient temperature: -25°C – $+60^{\circ}\text{C}$ (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: I

4.3 Module technical parameters

Table 1 Technical Parameters

DC Side Parameters		
Circuits	1	
DC voltage range	DC 630 V-900 V	Full load
DC maximum current	190A	
Rated DC power	100 kW	
Stabilized voltage precision	$\leq \pm 2\%$	
Stabilized current precision	$\leq \pm 5\%$	
Voltage limiting characteristics	Yes	
Current limiting characteristics	Yes	
AC Grid-connected Parameters		
Rated power	output 100 kW	Input 100 kW
Overload capacity	output 173 A	Input 173A
Rated voltage	AC 400 V	
Rated output current	145 A	
AC access method	Three-phase four-wire	
Isolation mode	Non-isolated	
Grid voltage range	340-460 V	
Grid frequency range	50 Hz/60 Hz $\pm$ 2.5 Hz	
Total harmonic distortion rate of current	$\leq 3\%$ (full load)	
Power factor	-0.99-0.99	
Current DC component	$\leq 0.5\%$	
Charge and discharge conversion time	<100 ms	
AC Grid-disconnected Parameters		
AC grid-disconnected voltage	AC 400 V	
AC voltage range	AC 400 V $\pm$ 3%	
AC grid-disconnected frequency	50 Hz/60 Hz	
Grid-disconnected output THDU	$\leq 3\%$ (linear load)	
Unbalanced load capacity	100%	
Grid-disconnected multi-machine parallel	Nonsupport	

DC side in parallel	Nonsupport	
Other Parameters		
Maximum conversion efficiency	$\geq 98\%$	
Allowable ambient temperature	-25°C-60°C	> 45°C derating
Allowable relative humidity	$\leq 95\%$	
Noise	≤ 75 dB	
Protection grade	IP20	
Pollution degree	I	
Altitude	3000 m	>2000 m derating
Enclosure Dimensions	W 480 × H 260 × D 720 mm	Cabinet size
Structure and cooling of PCS module	Details of the structure and heat dissipation direction are shown in the appearance and dimensional drawing;	
Weight	70 kg	
Cooling method	Forced air cooling	
Multi-module networking mode	AC side in parallel	
Emergency stop function	Module IO receives emergency stop switch commands	
Man-machine interaction	The module does not have an LCD screen and requires an external 7-inch configuration screen	
BMS communication interface	CAN	
EMS communication interface	Network interface or 485	
Communication with the screen	Network interface	

4.4 Exterior view of the module



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

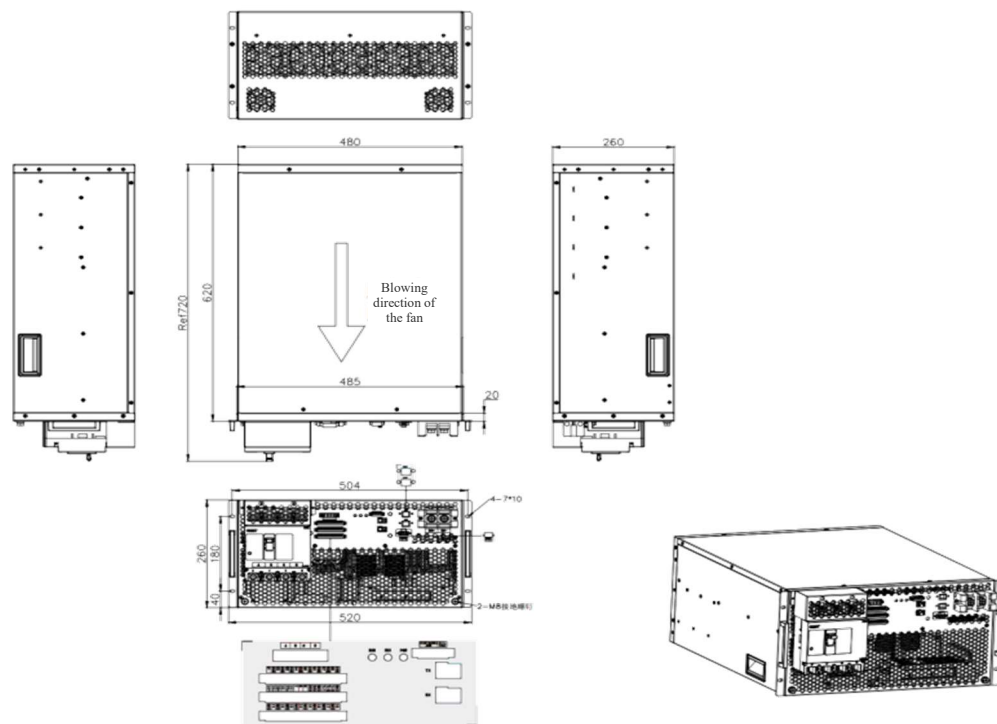
(Primary terminal, secondary terminal front panel, rear air inlet and front air outlet)



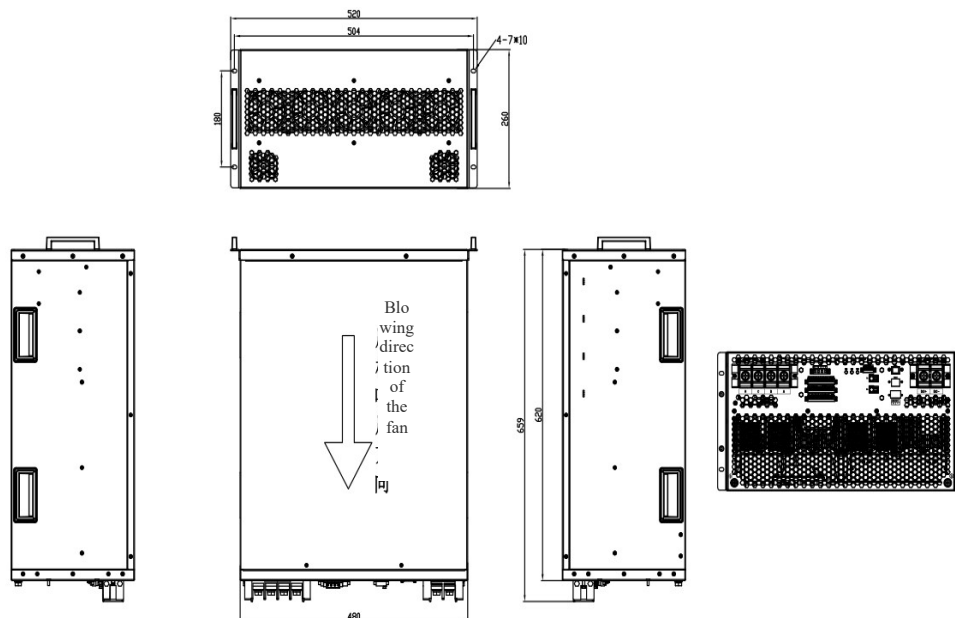
INPPCS-100/0.4-W-24-C1-OS

(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