LOOM SOLAR

CAML

Lithium Battery

CAML 10051 WM-LV

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Corporate Idenficaon Number (CIN)-U31909HR2018PTC074935

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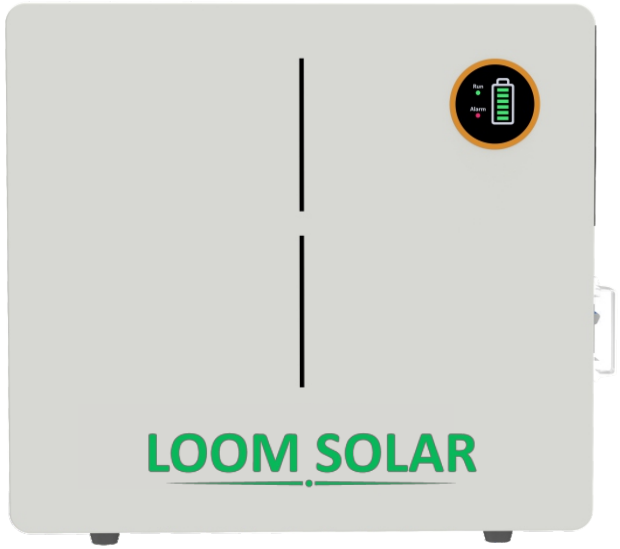

CAML 10051 WM-LV Operation Manual

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TECHNICAL DATA

NOTE

Operating current derating according to cell voltage and battery temperature.

Performance	
Nominal Voltage	51.2 Vdc
Nominal Capacity	100Ah
Battery Energy[1]	5120 Wh
Charge Voltage	55.68~56.16Vdc
Discharge Voltage	45.6-56.16 Vdc
Nominal Charge/Discharge Current	20A
Nominal Charge/Discharge Power	5000W
Max Charge /Discharge Current	100A
Max Charge /Discharge Power	5000W
Short Circuit Current	350A
Communication	
Display	SOC status indicator, LED indicator
Communication	RS232、RS485、CAN
General Specification	
Dimension(W×D×H mm)	520×470×141.5mm
Weight (Kg)	47.2kg
Installation	Floor stand or Wall mounted
Working Temperature[2]	0℃ ~ 55℃
Storage Temperature	-20℃ ~ 60℃
Operating /Storage /humidity	≤95%RH
Max Operating Altitude	≤2000m
IP Rating	IP54
Cell Technology	$LiFePO_4$，Lithium Iron Phosphate
Cycle life[3]	3000 Cycles @ 80% DOD /25℃ /0.5C，60%EOL
Scalability	Max 15 batteries in parallel
Standard Compliance	
Certification	CB,IEC62619; GPSD EN62619; CE-EMC, EN61000-6-1/2/3/4; UN38.3;MSDS;RoHS

1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25℃.
2. Charge/discharge derating occurs when the operating temperature from -10℃ to 5 ℃,& 45 ℃ to 55 ℃.
3. Condition apply. Refer to LV-BAT-W5.12Aa Warranty Letter.

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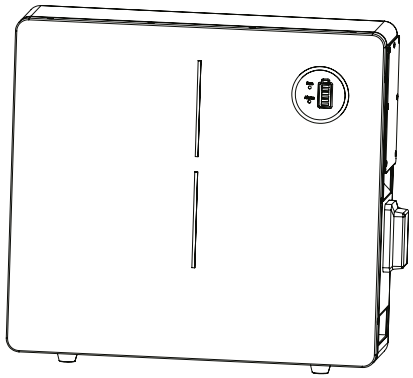
PRODUCT OVERVIEW

2.1 Brief Introduction

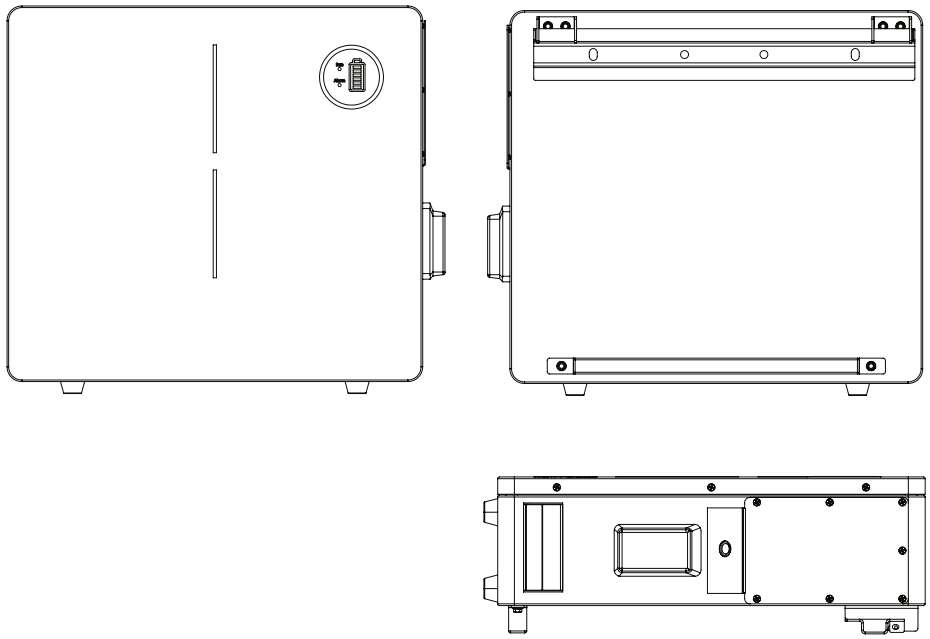


45.6~56.16V. It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **CAML 10051 WM-LV is not suitable for supporting life-sustaining medical devices.**

CAML 10051 WM LV has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. Besides that, BMS can balance cells charging to extend cycle life. BMS has protection functions including over-dis- charge, over-charge, over-current and high/low temperature; the system can automatically manage charge state, discharge state and balance state.

Multiple CAML 10051 WM LV can be connected in parallel to expand capacity and power, 8 CAML 10051 WM LV can be connected in parallel at most. CAML 10051 WM LV is a lithium battery with an operating voltage range between battery system will operate normally.

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1. Switch ON

Turn on a single CAML 10051 WM LV, turn on the air switch, then press the circular weak current switch (more than 3 seconds) on / off button, the LED flashes and the battery works normally. L1 to L6 display the battery SOC,L7/L8 to indicate the battery status.

For multiple CAML 10051 WM LV in parallel, switch ON rocker switch on all batteries, long press (more than 3 seco nds) ON/OFF button of MASTER battery, LED will flash, battery system will automatically encode and assign ID to each slave battery, then

2. Switch OFF

Press the sta rt wea k p ower b utto n o f the master pa ckag e for more tha n 3 se cond s, an d the n re lea se th e b utton . Whe n a ll slave pa ckag es are clo sed, th e master pa ckag e will be close d (h ibe rna tion mo de). Fo r a sin gle rn o ff th e fle a switch. For multiple CAML 10051 WM LV ara llel, tu rn o ff the wea k cu rrent switch o n the main b attery first. The n tu rn o ff the weak switch o n a ll sub ord ina te ba tte ries.

2.2.2 LED Indicator Definition

Note:

flash 1 - 0 .2 5s lig ht / 3.75s of f

flash 2 - 0 .5 s ligh t / 0.5s o ff

flash 3 - 0 .5 s ligh t / 1.5s o ff

LED Indicators Instructions

		RUN	ALM	Battery Level Indicator						
Status		L8	L7	L6	L5	L4	L3	L2	L1	Descriptions
Shutdown		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby		Flash 1	OFF	According to the battery level						Indicates Standby
Charging	Normal	Light	OFF	According to the battery level						The highest capacity indicator LED flashes(flash 2),others lighting
	Full Charged	Light	OFF	Light	Light	Light	Light	Light	Light	Turn to standby status when charger off
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Flash 3	OFF	According to the battery level						
	UVP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge
Fault		OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and Discharge

Charging Battery Level Indicators Instructions

Status		Charging							
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
Battery Level % ( )	0～17%	Light	OFF	OFF	OFF	OFF	OFF	OFF	Flash 2
	18～33%			OFF	OFF	OFF	OFF	Flash 2	Light
	34～50%			OFF	OFF	OFF	Flash 2	Light	Light
	51～66%			OFF	OFF	Flash 2	Light	Light	Light
	67～83%			OFF	FLASH 2	Light	Light	Light	Light
	84～100%			Flash 2	Light	Light	Light	Light	Light
	Full Charged			Light	Light	Light	Light	Light	Light

Discharging Battery Level Indicators Instructions

Status		Discharge							
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
Battery Level (%)	0～17%	Flash 3	OFF	OFF	OFF	OFF	OFF	OFF	Light
	18～33%			OFF	OFF	OFF	OFF	Light	Light
	34～50%			OFF	OFF	OFF	Light	Light	Light
	51～66%			OFF	OFF	Light	Light	Light	Light
	67～83%			OFF	Light	Light	Light	Light	Light
	84～100%			Light	Light	Light	Light	Light	Light

2.2.3 CAN / RS485 Port

CAN / RS485 Communication Terminal (RJ45 port), connect to inverter, follow CAN / RS485 protocol.

PIN	Definition
Pin 1 Pin 8	RS485 -B (to PCS, reserved)
Pin 2 Pin 7	RS485 -A (to PCS, reserved)
Pin 3	NC
Pin 4	CANH (to PCS)
Pin 5	CANL (to PCS)
Pin 6	GND

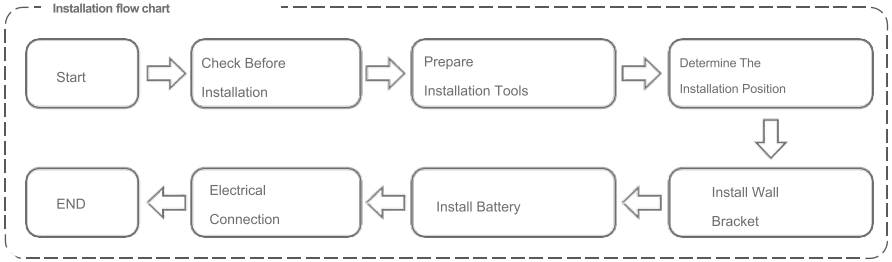
2.2.4 RS232 Port

RS232 Communication Terminal (RJ45 port) follow RS232 protocol, for manufacturer or professional engineer to debug or service.

PIN	Definition
Pin 1 Pin 8	GND
Pin 2 Pin 7	RS232_TX
Pin 3 Pin 6	RS232_RX
Pin 4 Pin 5	NC

03

INSTALLATION GUIDE



3.1 Checking Before Installation

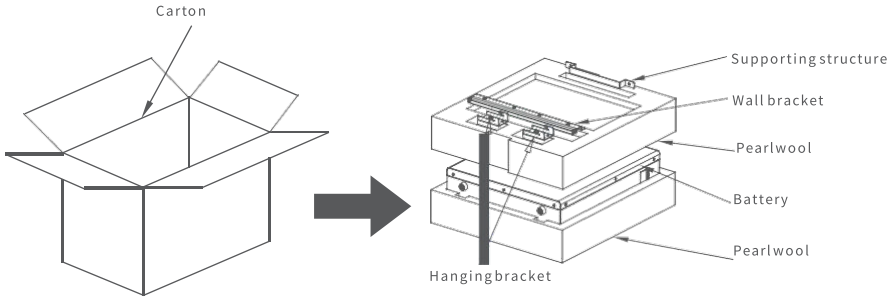
3.1.1 Checking Outer Packing Materials

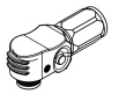
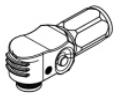
Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the battery. Checking the surface of packing materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the dealer as soon as possible. You are advised to remove the packing materials within 24 hours before installing the battery.

3.1.2 Checking Deliverables

After unpacking the battery, check whether deliverables are intact and complete. If any damage is found or any component is missed, contact the dealer.

The below table shows the components and mechanical parts that should be delivered.



ON	Picture	Quantit	Description
1		1	Battery
2		1	Wall mounting fixture
3		2	Battery wall mount fastener
4		1	Bottom support
5		1	Parallel terminal +
6		1	Parallel terminal -
7		1	Output terminal line +

ON	Picture	Quantit	Description
8		1	Output terminal line -
9		4	Wall mount fastener screw
10		10	Battery wall pendant and bottom support screw
11		1	Shipment inspection report
12		1	Ex-factory inspection report
13		1	Network port communication line
14		2	Transport moistureproof agent

3.2 Tools odel

Tools			
Installation	Knife 	Measuring tape 	Socket wrench （10/16mm） 
	Rubber mallet 	Cross Screwdriver 	Hammer drill（10mm） 
Protection	ESD gloves 	Safety goggles 	Anti-dust respirator 
	Safety shoes 		

3.3 Installation requirements Install the battery in the indoor environment.

3.3.1 Installation environment requirements Only mount battery on fire resistant buildir

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•Place battery in secure location away from children and animals.
•Do not place the battery near any heat sources and avoid sparks.
•Do not expose the battery to moisture or liquids.
•Do not expose the battery to direct sunlight.

3.3.2 Installation carrier requirements

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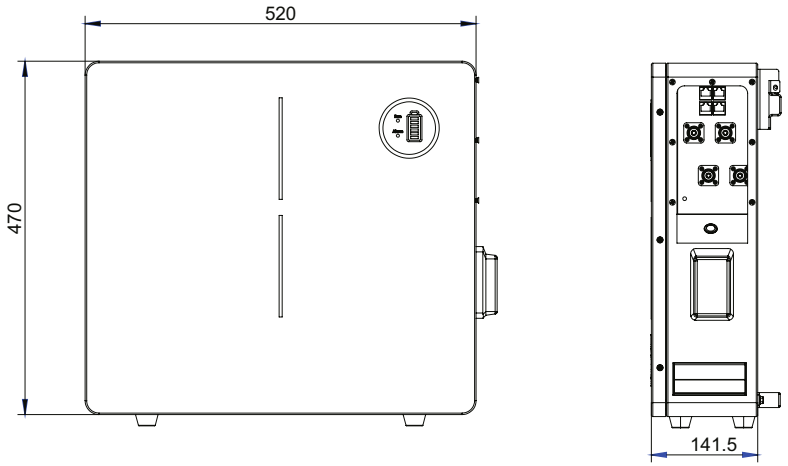
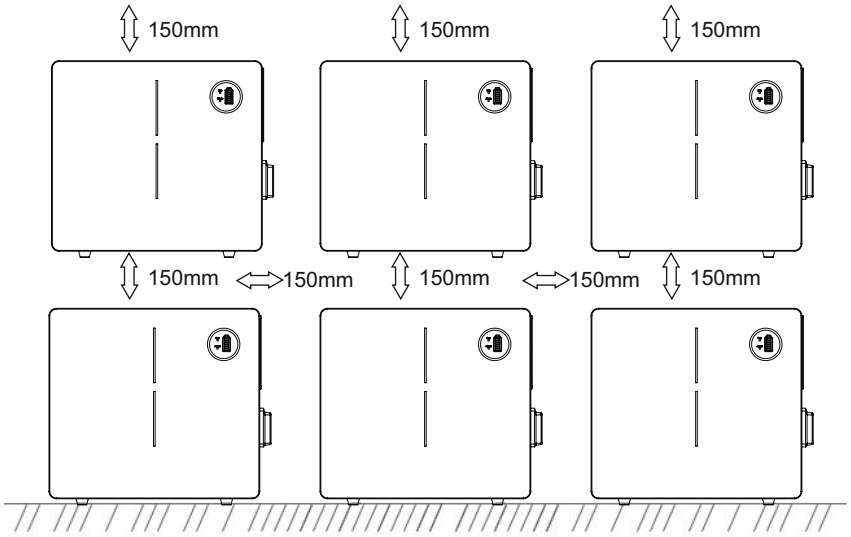
buildings.
•Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

3.4 Installation Instructions 9

3.4.1 Dimensions



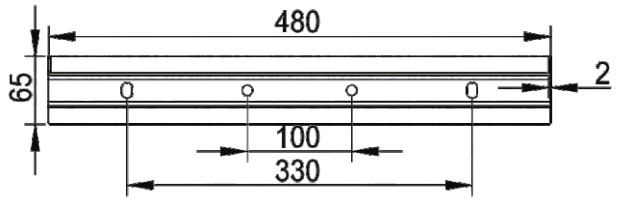
Minimum mounting distance between battery pack and equipment:



3.4.2 Installation Procedure

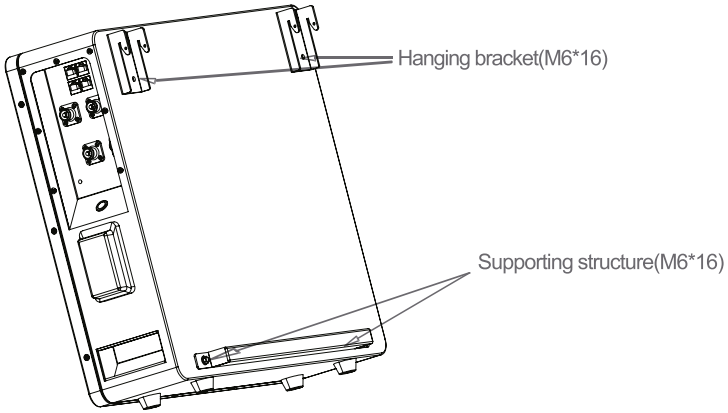
STEP 1

Drill the hole with an 10mm drill bit as follows and fix the wall bracket to the wall.



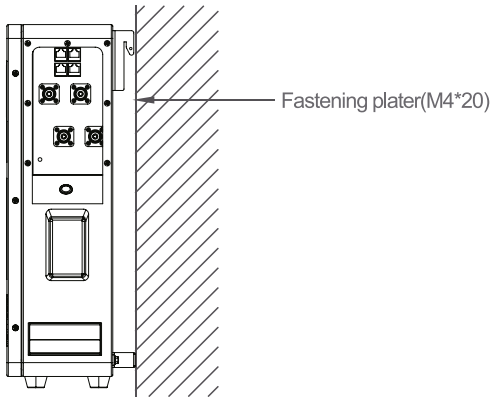
STEP 2

Install the hanging bracket.



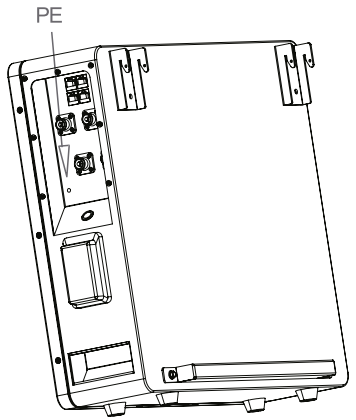
STEP 3

Hang L the wall bracket and tighten it.



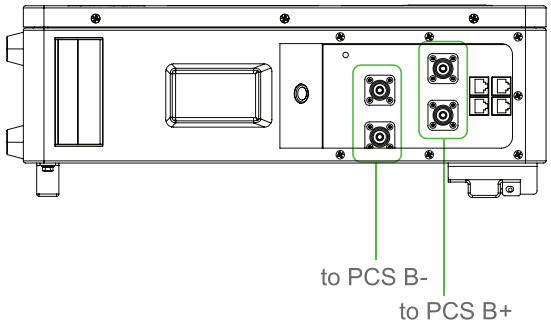
STEP 4

Connect to ground.



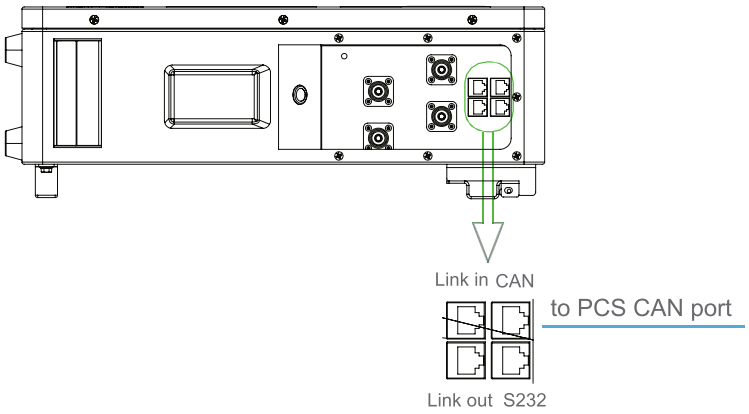
STEP 5

Connect power cable.



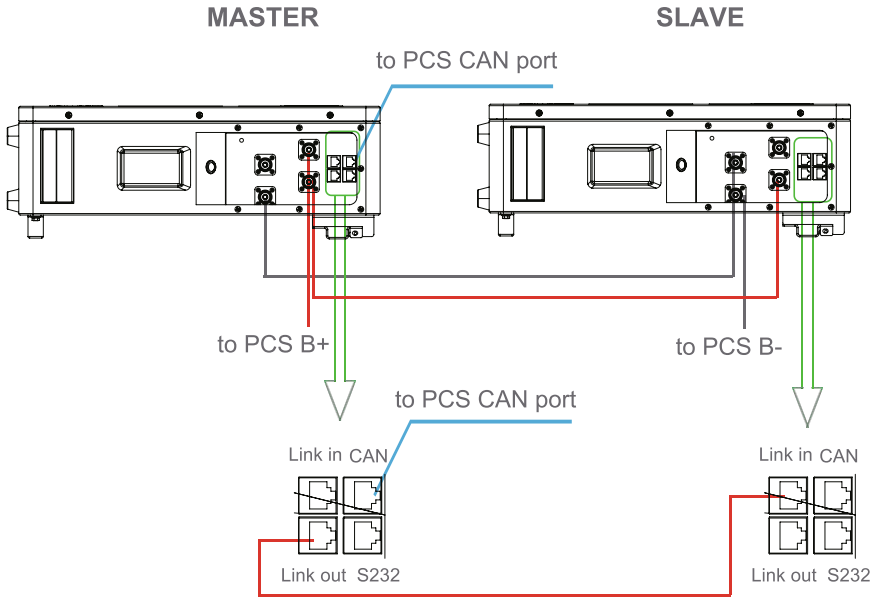
STEP 6

Connect communication cable.



STEP 7

When multiple batteries are connected in parallel, follow the following wiring mode.



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MAINTENANCE

4.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with temperature range between-10C~+45C, and maintained regularly according to following table with 0.5C(25A) current till 40% SOC after long storage time.

Storage Environment Temperature	Relative Humidity of Storage Environment	Storage Time	SOC
Below -10	/	prohibit	/
-10~25	5%~70%	≤12 months	30%≤SOC≤60%
25~35	5%~70%	≤6 months	30%≤SOC≤60%
35~45	5%~70%	≤3 months	30%≤SOC≤60%
Above 45	/	prohibit	/

4.2 Recharge Requirements When Over Discharged

Over discharged (90%DOD) battery should be recharged according to following table ,otherwise over discharged battery will be damaged.

Storage Environment Temperature	Storage Time	Note
-10~25	≤15 days	Battery Pack disconnected from PCS
25~35	≤7 days	
-10~45	<12 hours	Battery Pack connected to PCS