Watt&Well
CONVERTING POWER INTO CONFIDENCE

HIGH POWER SERIES

Power Conversion System for BESS

HIGH POWER | ENERGY STORAGE | INVERTER

OVERVIEW

PCS-100-LS is a grid-tied active front end capable of bidirectional conversion between AC grid network and DC battery.

It features a modular design capable of parallel operation and can be used as a part of a very high-power system.

Typical application: Grid tied inverter connected to stationary battery in large scale BESS.

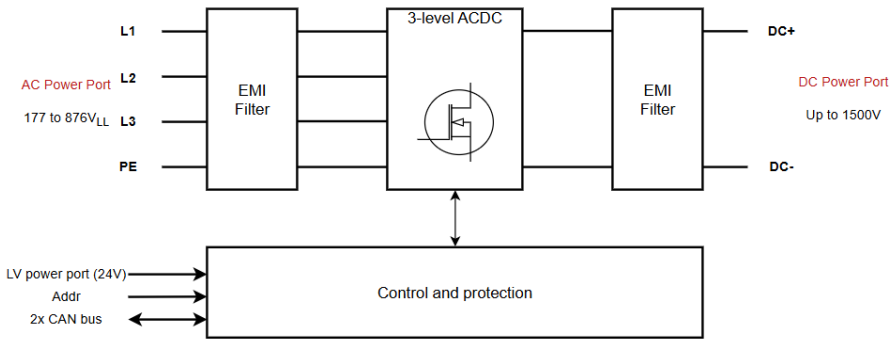
FEATURES

- Input AC grid connection up to 876V line to line
- AC connection to 50/60Hz grid.
- Up to 100A_{RMS} per phase
- Up to 126kW at 730V_{LL}
- Capable of charging batteries up to 1500VDC
- Grid forming capability
- Liquid cooling
- CAN open compatible digital bus with advanced control and monitoring
- Integrated protections: OCP, OTP, OVP and UVLO

VERSIONS

	AC WIRES
PCS-100-LS	**3P**

BLOCK DIAGRAM



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Revision date: 12/2025

Important note: this datasheet contains advanced information about an unreleased product. Values are susceptible to change in significant ways without prior notice (preliminary design)

WARNING

This equipment operates at voltages and currents that can result in electrical shock, fire hazard and/or personal injury if not properly handled or applied. Equipment must be used with necessary caution and appropriate safeguards employed to avoid personal injury or property damage.

This board must be used only by qualified engineers and technicians familiar with risks associated with handling high voltage electrical and mechanical components, systems, and subsystems.

Table of Contents

1. Safety instructions

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important instructions for **PCS-100-LS** model that shall be followed during installation, operation and maintenance of the unit.

1.1. Caution

The following safety instructions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with the safety precautions or warnings in this documentation violates safety standards of design, manufacture and intended use of this equipment and may impair the built-in protections within. WATT & WELL shall not be liable for users to comply with these requirements.

1.2. Installation

PCS-100-LS device must be installed following installation chapter.
This product is a safety **Class 1** instrument. To minimize shock hazard, the instrument chassis must be connected to the ESS frame which is in turn connected to earth ground.

The protective earth terminal must be connected to the safety electrical ground before another connection is made. Any interruption of the protective ground conductor, or disconnection of the protective earth terminal will cause a potential shock hazard that might cause personal injury.

PCS-100-LS device is designed to be accessible only for trained staff operators in **restricted access locations.**

1.3. AC grid rating

CAUTION - To reduce the risk of fire, connect only to a circuit provided with **150** amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70. Rating of the overcurrent protective device shall not exceed the ampacity of the conductor intended to be connected to the converter.
Do not use power supplies which exceed the input voltage rating of this instrument. The electrical rating of this instrument is given into the chapter 4 of this document.

1.4. DC battery rating

CAUTION - To reduce the risk of fire, connect only to a circuit provided with **160** amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70. Rating of the overcurrent protective device shall not exceed the ampacity of the conductor intended to be connected to the converter.
Do not use power supplies which exceed the input voltage rating of this instrument. The electrical rating of this instrument is given into the chapter 4 of this document.

1.5. Live circuits

Operating personnel are not allowed to open the case of this equipment. Internal adjustment or component replacement is not allowed by non-WATT & WELL qualified personnel. Never replace components with cable connected to this instrument. To avoid injuries, always disconnect power and remove external voltage sources before touching components. No user serviceable parts are inside the converter.

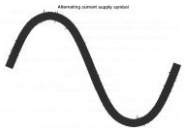
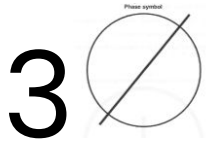
1.6. Hot surface

Surface of the product could be hot during and after operation.
To reduce the risk of burns - Use adequate protection before touching the device.

1.7. Touch current

CAUTION: A touch current > 3.5 mA AC RMS is possible in case of a fault condition of loss of electrical continuity of the earthing conductor in IT earthing systems.
The minimum size of the protective earthing conductor shall comply with the local safety regulations.

1.8. Marking

Symbol	English	French
	Input alternating current	Courant d'entrée alternatif
	Number of phases input phase	Nombre de phase AC
	Grounding	Prise de Terre
	CAUTION – Risk of electric shocks Capacitor stores hazardous energy. Do not remove cover until 5 minutes after disconnecting all sources of supply.	Attention – Risque de choc électrique Le condensateur accumule de l'énergie dangereuse. Ne pas retirer le couvercle jusqu'à 5 minutes après le débranchement de toutes les sources d'alimentation.
	CAUTION – HOT SURFACES To reduce the risk of burns – Do not touch	ATTENTION – SURFACES CHAUDES Pour réduire le risque de brûlures – Ne pas toucher

1.9. Maintenance

Capacitors inside the unit store hazardous energy. Do not remove the cover until 5 minutes after disconnecting all sources of supply.

1.10. Safety related functions

All safety related mechanisms and functions are implemented by hardware. The software does not provide or perform safety-related functions.

1.11. Parts substitution and modifications

Parts substitutions and modifications are allowed by authorized WATT & WELL service personnel only.
For repairs or modification, the unit must be returned to WATT & WELL's After Sale Service. Contact After Sale Service (aftersales@wattandwell.com) to obtain a return merchandise authorization (RMA) number.

WATT & WELL
After Sale Service
121 Rue Louis Lumière
84120 PERTUIS
France

1.12. Environmental condition

PCS-100-LS device safety approval applies to the following operating conditions:

- Integrated into IP 65 ESS structure
- Maximum relative humidity : 95% at 50°C non-condensing
- Altitude : up to 2000m
- Pollution degree : 2[1]
- Overvoltage category : II on the AC side
  I on the DC side
- IP degree of enclosure : No protection against contact.


Protective ground conductor terminal

The ESS where **PCS-100-LS** will be installed should meet the requirements of environmental protection as defined in IEC62477-1.

This converter does not provide protective means for access to hazardous live parts. AC and DC connections are accessible. It is intended to be installed inside a supplementary enclosure which provides appropriate protection against access to hazardous live parts.
Avoid using the inverter in the offshore environment near the sea or near a pollution source or in a corrosive and damaging environment.
For protection against hazardous accessible parts, spread of fire and for use of the converter in the above environment, the protection level of the structure where the converter is installed must reach IP65 or type 4.

[1] Attention should be paid to avoid ingress of water, metallic or conductive particles, dust or corrosive atmospheric that may cause early failures of equipment.

1.13. Normative compliance

PCS-100-LS meets the intent of directives:

- Low Voltage: 2014/35/UE
- CEM 2014/30/UE
    - NF EN IEC 61000-6-2: Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity standard for industrial environments
    - NF EN IEC 61000-6-4: Electromagnetic compatibility (EMC) Part 6-4: Generic standards – Emission standard for industrial environments
- RoHS: 2011/65/UE
- WEEE: 2012/19/EU

Please also note that **PCS-100-LS** is designed to be compatible with the following norms:

Normative	Name	Note
IEC 62477-1:2022	Safety requirements for power electronic converter systems and equipment – Part 1: General	
UL 1741	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources	

However, it is the user's responsibility to ensure that **PCS-100-LS** is installed and used in compliance with all local country laws and regulations. The product will be marked CE starting from version 2.0.

2. Moving and storage instruction

To ensure the safe handling and storage of the inverter and to prevent risks of fire, electric shock, or injury to people during subsequent use, please follow these instructions carefully:

Moving the Unit:

- Before moving the inverter, ensure it is powered off and disconnected from all electrical connections.
- Use proper lifting techniques and equipment to handle the weight of the unit.
- Avoid dropping, tipping, or applying excessive force to the unit during movement. Sudden impacts can damage internal components, potentially leading to safety hazards.
- Protect the unit from exposure to moisture, dust, and extreme temperatures during transportation.
- Use the original packaging or equivalent protective materials to minimize the risk of physical damage.

Storage Guidelines:

- Store the inverter in a clean, dry, and well-ventilated area.
- Avoid environments with high humidity or exposure to corrosive chemicals.
- Maintain the storage temperature within the range specified in the technical specifications of this manual
- Ensure the unit is stored in its upright position.

Inspection Before Reuse:

- Before reusing the unit after storage, inspect it for visible damage, including cracks, corrosion, or loose connections.
- Check all electrical terminals and connections for signs of damage or wear. Tighten any loose connections as per the installation guidelines.
- If any damage is observed, do not power on the unit. Contact a qualified technician or the manufacturer for further assistance.

3. Environmental Characteristics

Table 1: Absolute maximum ratings

Parameter	Condition
Operating temperature	-15°C ~ +50°C Recommended maximum ambient temperature is 50°C Power derating is applied in function of the ambient temperature
Long term storage temperature	-40°C ~+70°C
Relative humidity	5% RH ~95% RH (No condensation)
Altitude	Up to 2000m
Pollution degree	2
Overvoltage category	II on AC grid side
Acoustic noise	<50dBA

4. Electrical Characteristics

Table 2: Absolute maximum ratings

Parameter	Condition	Min	Max	Units
LV Input Voltage			26	V
DC side voltage			1500	V
AC side voltage (phase – phase)			876	V_{RMS}

All specifications are given for coolant temperature up to 50°C unless otherwise noted.

Table 3: Electrical characteristics

Parameter	Condition	Value			Units
		Min	Typ	Max	
AC grid side					
Voltage (phase - phase)		177	730	876	V_{RMS}
Voltage (phase - neutral)		103	421	506	V_{RMS}
Current (per phase)	Up to 25°C inlet coolant temperature	0		100	A_{RMS}
Current (per phase)	Up to 50°C inlet coolant temperature	0		83	A_{RMS}
Grid frequency		42.5	50/60	69	Hz
Maximum power at $400V_{LLRMS}$	Up to 25°C inlet coolant temperature			69	kVA
Maximum power at $690V_{LLRMS}$	Up to 25°C inlet coolant temperature			119	kVA
Maximum power at $730V_{LLRMS}$	Up to 25°C inlet coolant temperature			126	kVA
Current measurement initial accuracy	@100A			3	%

Voltage measurement initial accuracy	@730V_{LL}			3	%
Switching frequency			35		kHz
Response time	From full power charge to full power discharge		20		ms
Power factor[1]	Reactive power control	0 UE 0 OE		1	-
DC side					
Voltage		250[2]	1350	1500[3]	V_{DC}
Current	Battery charge Battery discharge			-123 123	A_{DC}
CAN communication					
CAN baud rate			1000		kbps
CAN common mode range[4]		-7		7	V
Digital Inputs					
Positive going input current (EMS, GPIO)		2		10	mA
Negative going input current (EMS, GPIO)				0.1	mA
Maximum reverse voltage				5.5	V
LV input					
Supply voltage		19	24	26	V
Input current standby			0.2		A
Input current start-up (inrush)	@24V input during 1ms			3	A
Under Voltage Shutdown (programmable)				16	V
Over Voltage Shutdown (programmable)				30	V
Power consumption		5[5]		15	W
Insulation					
Input/Output to case (PE)	50/60Hz, 1 min	3100			V_{RMS}

4.1. Earthing system compatibility

The inverter is compatible with TT, TN and IT earthing systems.

4.2. Safe Operating Area

PCS-100-LS automatically adjusts its operation to the typical operating zone of a battery.
A Safe Operating Area (SOA) in three-phase mode (690V_{LL} @50Hz) is given in **Figure 1** where two modes can be identified:

- Inverter mode: current flow from battery to grid - Positive battery current
- Rectifier mode: current flows from grid to battery – Negative battery current

[1] Converter can deliver full inductive or capacitive reactive power
[2] See "Operating battery voltage" section
[3] Below 340VLL, PCS-100 cannot be interfaced with 1500V battery. DC voltage is limited to 4 times the grid voltage
[4] CAN common mode: CAN_H and CAN_L versus CAN_GND
[5] Standby mode operation

PCS-100-LS can change between both operating modes and go to full power in either direction.

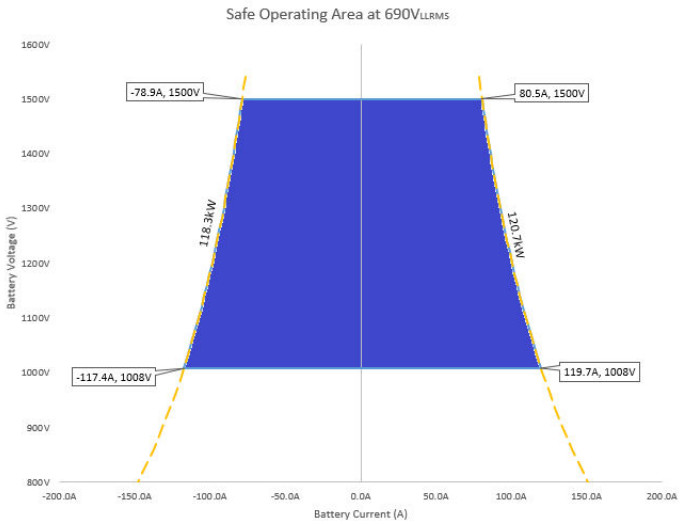


Figure 1: Safe Operating Area at 690V_{LL}

SOA is also given for 730V_{LL} @50HZ:

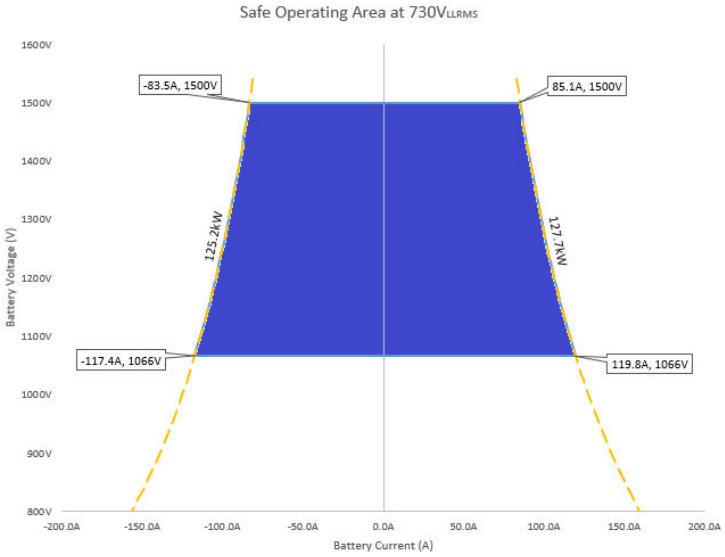


Figure 2: Safe Operating Area at 730V_{LL}

4.3. Reliability

Table 4: Reliability characteristics

Parameter	Condition	Value			Units
		Min	Typ	Max	
MTBF	Coolant temperature 25°C		400,000		hours

4.4. Typical efficiency

PCS-100-LS is based on highly efficient full SiC (Silicon Carbide) technology. Peak efficiency exceeds 99%.

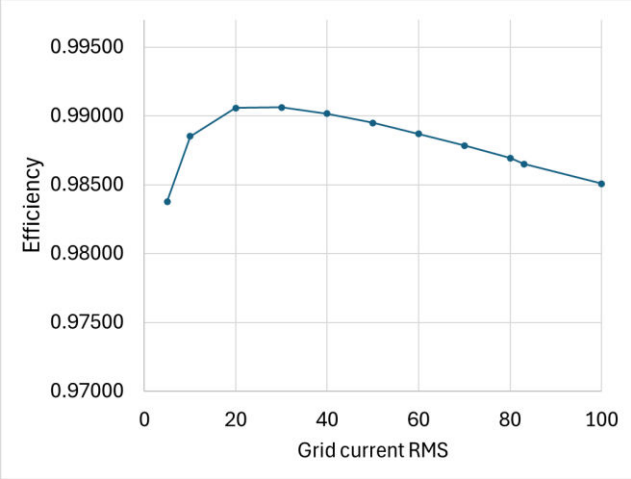


Figure 3: Estimated efficiency

4.5. AC power

PCS-100-LS is sized for 100Arms per phase in both directions. Power increases or decreases linearly according to the grid voltage and the maximum phase current. Above 730V_{LL}, power is kept constant at 126kW

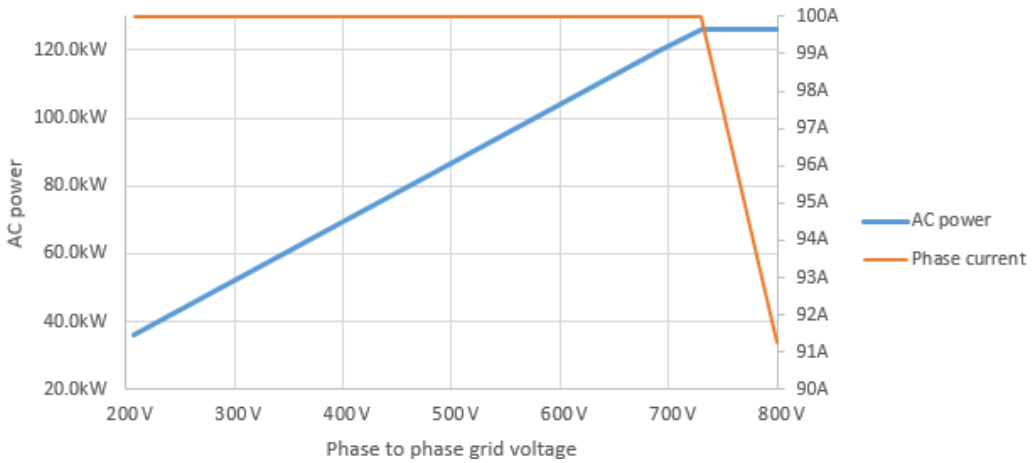


Figure 4: AC power vs AC phase to phase voltage

Maximum power is available when the inlet coolant temperature is below 25°C with a maximum of 100Arms on the AC side. Between 25°C and 50°C, a slight derating is applied until limiting the maximum AC current to 83Arms. Above 50°C, a sharp linear derating is applied.

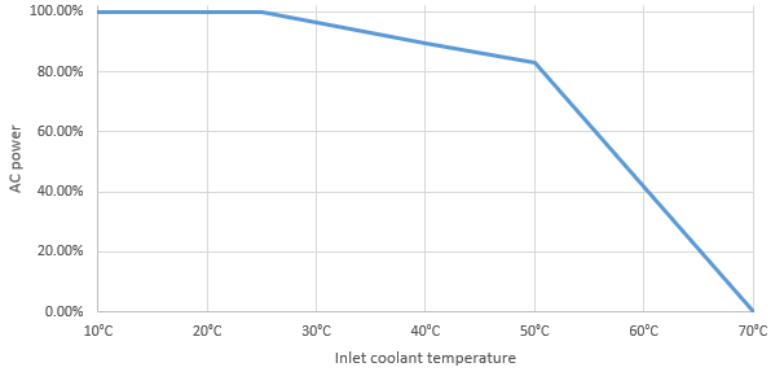


Figure 5: Maximum available AC power vs inlet coolant temperature

4.6. Operating voltage battery

The battery connected to the **PCS-100-LS** shall have its minimum voltage rated according to the grid voltage:

Table 5: Minimum battery voltage versus line-to-line grid voltage

Maximum grid voltage (phase - phase)	Minimum battery voltage
$876V_{RMS}$	1279V
$730V_{RMS}$	1066V
$690V_{RMS}$	1008V
480 V_{RMS}	701V
400 V_{RMS}	584V

Formula can be expressed as the following: $VDC_{min}=1.46*V_{LLRMS}$

5. Installation

The unit must be properly assembled in accordance with the assembly instructions before it is used.
Do not use or install **PCS-100-LS** product in case of visible physical damage.
PCS-100-LS should be installed in ESS structure that complies with frame and enclosure requirement of UL1741.
Installation and maintenance shall not be performed while the converter is energized.

These installation instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform servicing other than that specified in the following instructions unless you are qualified to do so.

5.1. Mechanical installation

5.1.1. Handling

PCS-100-LS product has a weight of about 35 Kg. For correct handling, follow instruction below:

- The product must be handled flatly.
- For operator safety use personal protective equipment.
- Do not stack units (each unit should be self-supported and secured with the dedicated screws threads)

5.1.2. Mounting

PCS-100-LS is a heavy instrument and requires the frame to be equipped with slides or rails that provide full-depth support for the chassis.
Only one way is possible to mount the PCS-100-LS. The bottom plate shall face downward. All other positions are prohibited.

5.1.3. Cooling system

PCS-100-LS is liquid cooled. The following table shows the cooling system parameters.

Table 6: Cooling system parameters

Parameter	Value
Liquid Flow	5L/min
Water pressure drop	<0.5 bar @5LPM
Nominal inlet pressure	2.5 bar
Maximum inlet pressure	4 bar
Coolant	Mix water plus ethylene glycol (50%/50% concentration)
Inlet temperature	-15 to 50°C

5.2. Electrical installation

5.2.1. Legal installation

Electrical installation shall comply with international standards such as IEC or the requirements in national standards of each country.

5.2.2. Safety Notice

Never invert the polarity of the connector. Never force to place a connector. Use only approved manufacturer parts for electrical or mechanical connection.
It is strongly recommended to fix the cables or bus bar to avoid any stress on the connection.
All high-power connections must be screwed up to avoid any disconnection.
Be careful if other devices are connected, there is a risk of electrical charge transfer.
It is forbidden to open the cover. Only WATT & WELL approved personnel are allowed to do maintenance operations. Waiting time after complete suppression of AC and DC voltage before opening the device should be respected.

5.2.3. Protective earth

PCS-100-LS should be referenced to the ESS frame which is in turn connected to earth ground.
Any interruption of the protective ground conductor, or disconnection of the protective earth terminal will cause a potential shock hazard that might cause personal injury or death.
Protective earth connection is made through earth connection point (screw thread available on the front panel of the converter).
In addition, all parts of the chassis where **PCS-100-LS** is to be installed (i.e., the ESS frame) need to be grounded. An electrical connection to "G" through mechanical parts must be done.
The protective earthing conductor and the protective conductor shall be green/yellow striped color with a cross section rated to carry the required current in accordance with the overcurrent protective device.
Any interruption of the protective ground conductor, or disconnection of the protective earth terminal could cause a shock hazard that might cause personal injury or death.

PCS-100-LS is only allowed to be operated by skilled personnel or instructed personnel.

5.2.4. AC Input

AC input is defined as three phases.
PCS-100-LS product must be protected against short-circuit, overload protection and earth leakage current protection with external devices.
AC connection is not internally bonded to the ground connection.

A surge protection shall be installed outside of the inverter to protection against voltage transients.

AC input connection must be connected through an overcurrent protection device in the end product.

For European countries, we recommend using a residual current breaker/device (RCB/RCD) and a circuit breaker (MCB) with short circuit protection and thermal overload protection.

5.2.5. LV DC input

LV input must be connected to a class 2 AC/DC converter with a nominal 24Vdc output voltage, limited to 26V maximum and 30W.
This input must be protected with a short circuit protection device either integrated into the AC/DC power supply or with an external fuse of adequate rating. Rating of the overcurrent protective device shall exceed the ampacity of the conductor intended to be connected to the converter.
The cable to connect the LV input must be shorter than 3 m.

5.2.6. DC Input

PCS-100-LS DC input must be protected with a rapid fuse.
DC input connection must be connected through an overcurrent protection device in the end product. Rating of the overcurrent protective device shall exceed the ampacity of the conductor intended to be connected to the converter.

This cable must be shorter than 30 m.

5.2.7. EMI requirements

Converters are designed to be compliant with IEC 61000-6-2 standards.

- EMI emissions
  - Conducted emissions: class A (industrial environments)
  - Radiated emissions: class A (industrial environments)
- EMI immunity
  - IEC EN 61000-6-2: Immunity standard for industrial environments

However, Integrator is responsible to use best practice for final system to avoid high EMI emissions.

5.2.8. DC precharge

The converter does not provide an internal DC precharge circuit. To avoid damage to the converter, internal capacitors must be precharged before connecting the converter to the AC grid. For the precharge, we advise using the following system:

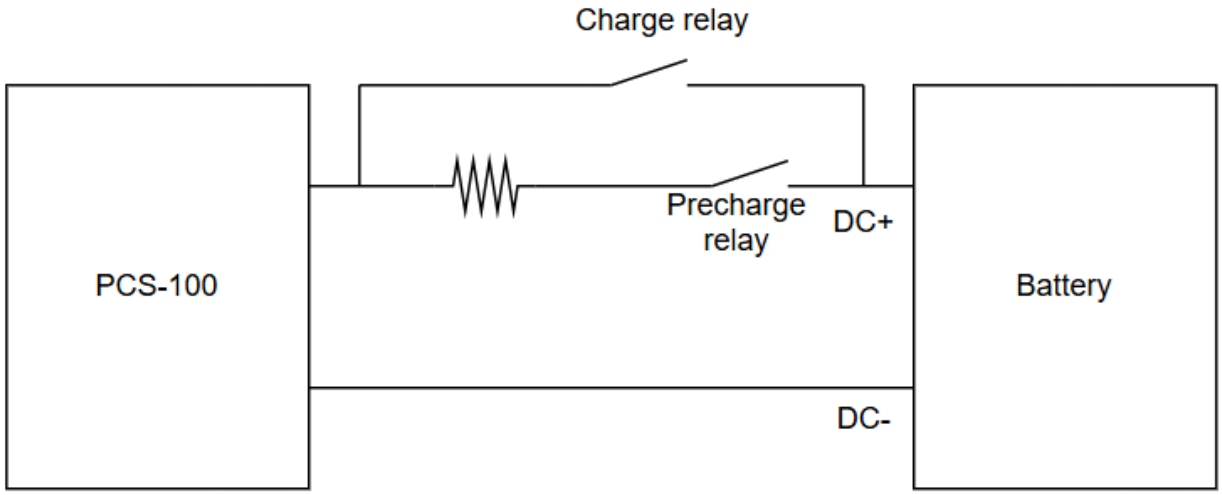


Figure 6: Precharge synoptic

The converter needs to precharge 330uF. Resistor and precharge relay must be designed to support the full battery voltage and the precharge current according to the resistor value.
The charge relay must be designed to support the full battery voltage and the maximum DC current of the converter.

After the precharge is done, the converter sends a signal to acknowledge the precharge. Then, the charge relay can be closed safely, and the AC grid can be connected to the converter to operate nominally.

Attention should be given to the minimum DC battery voltage according to the AC grid voltage. See 4.6section.

5.2.9. Connection and disconnection procedure

For the connection procedure, follow these instructions:

- Remove power from AC and DC sources to avoid risk of electrical shock using disconnector or other mean to provide safety to installation personnel while installing the converter in its final structure.
- Fix the unit to the final structure with the intended screw threads
- Connect the earth to the enclosure. See 6.2.4
- Connect DC terminals to battery cable or bus bar. See 6.2.2
- Connect AC terminals to grid cable or bus bar. See 6.2.3
- Connect LV terminals to the 24V power supply See 6.2.1
- Connect CAN communication terminal. See 6.2.6

- Connect the liquid cooling system. See 6.2.5
- Close the enclosure of the structure
- Enable liquid cooling system
- Enable LV power supply
- Connect the converter to the CAN communication system
- Close DC disconnector
- Perform DC precharge. See 5.2.9
- Once the precharge is done, AC voltage can be connected to the converter
- Converter is ready to operate

For the disconnection procedure, follow these instructions:

- Set the converter in standby through the CAN communication
- Disconnect the AC grid with the disconnector
- Disconnect the DC battery with the disconnector
- Stop the liquid cooling system
- Drain the liquid cooling system
- Disable LV power supply
- Wait 5 minutes before touching the hazardous accessible parts to wait for the complete capacitor discharge
- Disconnect liquid cooling terminals
- Disconnect CAN communication terminal
- Disconnect LV terminals
- Disconnect AC terminals
- Disconnect DC terminals
- Disconnect earth terminal
- Unfix the converter from the structure

5.2.10. Series operation

No series operations is allowed.

5.2.11. Disposal

- (Mandatory application within the European Union)
- Do not dispose of electronic tools tighter with household waste material. In accordance with WEEE European Directive (2012/19/UE), Electric material that has reached the end of their life must be collected separately and return to an environmentally compatible recycling facility. Please contact WATT & WELL for any questions about WEEE

6. Hardware specifications

6.1. Theory of operation

PCS-100-LS consists of a bidirectional 3-level inverter that interfaces the AC grid and performs DC regulation. The product does not provide galvanic insulation between AC and DC sides.

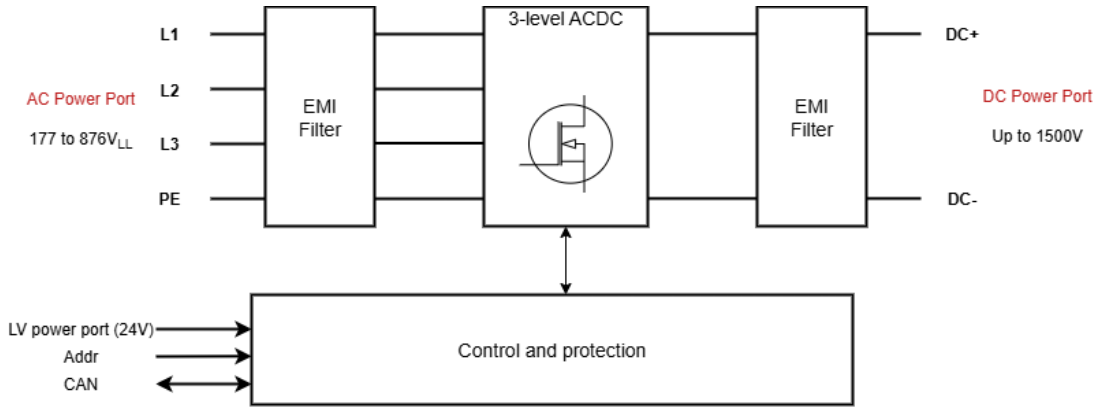


Figure 7: PCS high level synoptic

6.2. Interfaces and supply cables

Please note that the supply cables of the inverter shall be chosen to have an ampacity based on Table 310-16 of the National Electrical Code, ANSI/NFPA 70 of no less than 125 percent of the maximum current that the circuit carries during rated conditions; and that a wiring terminal are provided with a pressure terminal connector that is securely held by a screw.
All conductor materials shall be made with copper.

Please use an ordinary tool for securing all conductors.

6.2.1. Low voltage connector

Located on the rear panel. Cable connected to these ports must be less than 3m long.
Connector Reference (converter side):

- Phoenix Contact MSTB 2,5/ 2-GF-5,08 1776508 (UL approval 300V/15A)
- TIELEE: TLPHW-200R-02P-G12 (UL approval 300V/16A)

Recommended matting connectors (wire harness side):

Side	Connector	Manufacturer	Wire	Ferrule	Crimping tool
LV	MSTB 2,5/ 2-STF-5,08 – 1777989 (Screw terminal)	Phoenix contact	1 mm2	A 1 -6 Ref 3200247	Phoenix contact CRIMPFOX 6 Ref 1212034

	TLPSW-200V-02P-G12S	TIELEE	1 mm2	A 1 -6 Ref 3200247	

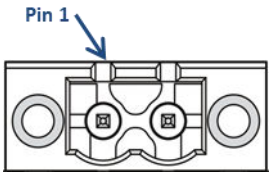


Figure 8: Low voltage connector

PIN	FUNCTION	DESCRIPTION	Preferred wiring color
1	LV_IN-	Low Voltage supply return (0V typ)	**Black**
2	LV_IN+	Low Voltage supply (24V typ)	**Red**

6.2.2. AC grid side connector

Located on the front panel.
Bus bar interface reference: IF-FM8M6-3356-150A Black 1500V from Wenzhou Hongying Electric
Interface is M8 threaded hole.

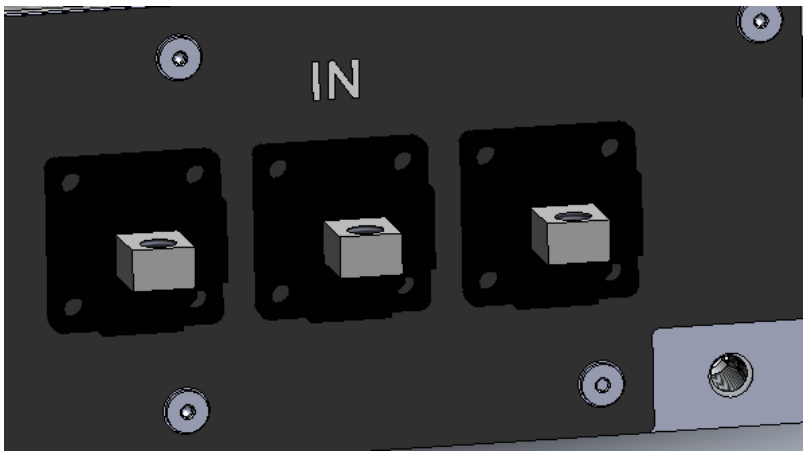


Figure 9: AC side connector

6.2.3. DC side connector

Located on the front panel.
Bus bar interface reference: IF-FM8M6-3356-200A Black/Red 1500V from Wenzhou Hongying Electric.
Red connector marked "+" is for the connection of the battery positive polarity, black connector marked "-" is for connection of the battery negative polarity.
Interface is M8 threaded hole.

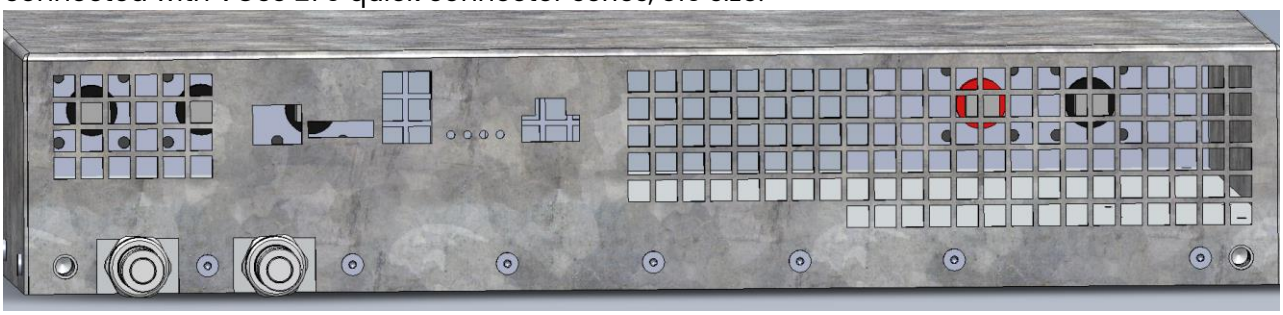
Figure 10: DC side connector

6.2.4. Protective earth

Protective earth is connected through a screw thanks to thread available on the front side of the inverter. Thread is sized for M8 screw, 16mm thread length.

6.2.5. Liquid cooling connector

Located on the rear panel.
Liquid cooling connector is an adapter for VOSS quick connectors. This connector shall be connected with VOSS 270 quick connector series, S10 size.



Left connector marked “OUT” is for connection of liquid cooling output. Right connector marked “IN” is for connection of liquid cooling input.

6.2.6. CAN connector

PCS-100-LS features two CAN bus for digital communications with other boards.
The CAN connector is an RJ45 connector. The cable connected to these ports must be less than 3m long.

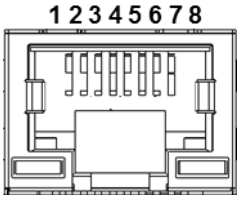


Figure 11 : CAN connector front view

Table 7 – CAN connector pinout

PIN	FUNCTION	DESCRIPTION
1	CAN H	CAN differential +
2	CAN L	CAN differential -
3	GND_ISO	Ground reference for CAN
4	EM_SHUT_RTN	Emergency Shutdown return line (negative)
5	EM_SHUT	Emergency Shutdown (positive)
6	NC	Not Connected
7	GND_ISO	Ground reference for CAN
8	NC	Not Connected

Note on CAN bus termination: CAN bus is expected to be terminated at each bus end with a 120 Ω resistance. Wiring should be selected to have an intrinsic impedance of the twisted that match this 120 Ω.
By default, **PCS-100-LS** does not include any 120 Ω resistor to avoid overloading the bus when multiple nodes are presents.

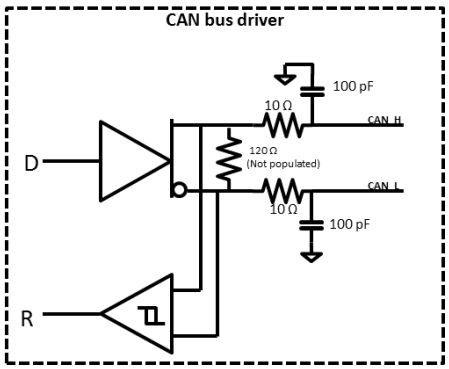


Figure 12: CAN transceiver simplified diagram

Note on CAN bus shield: Although ISO 11898-2 does not specify the wires type or the need for a shield, a shielded cable is recommended for electronically harsh environments.
It is recommended to ground the shield at a single point on the dedicated shield pin of the COM connector to avoid ground loops.
Also, remember that the CAN bus being isolated, the CAN_GND should be wired between nodes.

6.2.7. Address selector

Each **PCS-100-LS** device takes its CAN address at boot based on the addressing dip switch on the front panel.

6.2.8. Emergency Shutdown

The COM connector also transmits an **Emergency Shutdown** (EM_SHUT) signal. This signal can be used to trigger an unconditional shutdown of the **PCS-100-LS** operation. See **Error! R eference source not found.** for the pinout of EM_SHUT within the COM connector.

EM_SHUT logic is as follows:

- "floating": Emergency Shutdown triggered (EM_SHUT=1)
- 12V or 24V: normal operation (EM_SHUT=0)

The simplified circuit of the EM_SHUT is given in Figure 13.

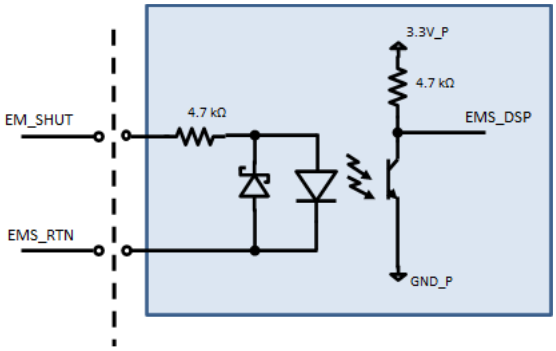


Figure 13 DSI input circuit

LEDs

4 LEDs on front panel indicate the status of the system

Table 8: LED overview

LED	COLOR	FUNCTION	Description
1	Red	Fault	Indicates a fault in the system. System stops as a result
2	Green	DC output	**Continuous:** System in charge mode
3	Green	Safe C	**Blinking at 5Hz:** Safe C mode. Input DC voltage is out of range. Output power is set off and the charger remains waiting for input DC voltage to return within acceptable range
4	Yellow or Orange	Voltage presence	**Slow blink:** Auxiliary voltage only (24V) **Continuous**: Grid voltage and Auxiliary voltage

7. Mechanical specifications

The mechanical dimensions of the **PCS-100-LS**, excluding connectors, are detailed below:

- Length: 590mm
- Width: 470mm
- Height: 88mm

8. Maintenance

It is forbidden to open the product.

8.1. Cleaning

Use a soft cloth for cleaning the device. Do not use cleaning agent.
Internal dust could be removed with vacuum cleaner or dry air cleaning.

9. Ordering information

9.1. Product Reference

	Status	Battery side	Grid	Other
PCS-100-LS	Under development	1500V, 123A	3P	x

9.2. Product accessories

WA016 – Pre-wired LV harness With color-coded 4mm insulated banana plug Cable length: 1m	
WA007 – CAN bus adaptor from RJ45 to DB9 including 120 Ω termination resistance	
WA009 – USB to CAN transceiver (Kvaser) Compatible with **PCS-100-LS** Monitor	
WA049 – MPU monitor license (USB license dongle) A Windows based GUI (Graphical User Interface) for easy access to measurements, monitoring and configuration parameters. It can be used to control **PCS-100-LS** as a PC based master or to speed-up integration of a dedicated system master.