Conext™ CL Three Phase Grid Tie Inverters
Conext™ CL 20000E
Conext™ CL 25000E

Installation and Operation Manual

990-9687C-001 Rev 04
August 2016

http://solar.schneider-electric.com

Exclusion for Documentation

Unless specifically agreed to in writing, seller
(a) makes no warranty as to the accuracy, sufficiency or suitability of any technical or other information provided in its manuals or other documentation;
(b) assumes no responsibility or liability for losses, damages, costs or expenses, whether special, direct, indirect, consequential or incidental, which might arise out of the use of such information. The use of any such information will be entirely at the user's risk; and
(c) reminds you that if this manual is in any language other than English, although steps have been taken to maintain the accuracy of the translation, the accuracy cannot be guaranteed. Approved content is contained with the English language version which is posted at solar.schneider-electric.com.

Date and Revision

August 2016 Rev 04

Part Number

990-9687C-001

Contact Information

http://solar.schneider-electric.com

For other country details please contact your local Schneider Electric Sales Representative or visit our website at:
http://solar.schneider-electric.com/tech-support/

About this Manual

Purpose

The purpose of this Installation and Operational Manual is to provide explanations and procedures for installation, operation, maintenance, and troubleshooting information for the following inverter models:

Part Number	Description
PVSCL20E100	Conext™ CL 20000E Base
PVSCL20E200	Conext™ CL 20000E Essential
PVSCL20E201	Conext™ CL 20000E Essential plus
PVSCL20E300	Conext™ CL 20000E Optimum
PVSCL20E301	Conext™ CL 20000E Optimum plus
PVSCL25E100	Conext™ CL 25000E Base
PVSCL25E200	Conext™ CL 25000E Essential
PVSCL25E201	Conext™ CL 25000E Essential plus
PVSCL25E300	Conext™ CL 25000E Optimum
PVSCL25E301	Conext™ CL 25000E Optimum plus

Scope

The Manual provides safety information and guidelines, detailed planning and setup information, procedures for installing the Conext™ CL inverter, as well as information about operating and troubleshooting the inverter. It does not provide details about particular brands of photovoltaic panels. For more information, consult individual PV manufacturers.

Audience

The information in this document is intended for a qualified personnel, who has training, knowledge, and experience in:

- Installing electrical equipment and PV power systems up to 1000 VDC.
- Applying all local installation codes.
- Analyzing and eliminating the hazards involved in performing electrical work.
- Selecting and using Personal Protective Equipment (PPE).

Installation, commissioning, troubleshooting, and maintenance of the inverter must be done only by qualified personnel.

Organization

This manual is organized into the following chapters and appendices.

Chapter 1, “Introduction” provides information about Conext™ CL 20000E and Conext™ CL 25000E three phase grid tie inverters.

Chapter 2, “Installation and Configuration” provides information and procedures for installing and configuring the inverter and the wiring box.

Chapter 3, “Operation” contains information on the basic operation of the inverter and the wiring box.

Chapter 4, “Troubleshooting” describes the event and service messages that might be displayed on the LCD of the inverter and the recommended solutions.

Chapter 5, “Maintenance” contains information and procedures for performing preventive maintenance on the inverter and the wiring box.

Appendix A provides the environmental, electrical, and other specifications for the inverters.

Appendix B describes the information that can be displayed on the LCD of the inverter.

“Information About Your System”can be used to record information about the inverter package.

Save this manual for easy access during the installation, maintenance and trouble shooting of the inverter.

Related Information

You can find more information about Schneider Electric Solar, as well as its products and services, at solar.schneider-electric.com.

Conventions Used

The following conventions are used in this manual.

⚠ ⚠ DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in death or serious injury.

⚠ CAUTION
CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in moderate or minor injury.

NOTICE
NOTICE indicates a potentially hazardous situation, which, if not avoided, can result in equipment damage.

Product Names

This manual includes information for two products: Conext™ CL 20000E and Conext™ CL 25000E photovoltaic three phase transformerless grid tie inverters each with five models of the wiring box. The following table lists the naming conventions used to differentiate information that only applies to one of the two inverters. For information common to all products, “inverter” is used.

Product Name	Usage
Conext™ CL 20000E	The information provided is specific to the 20 kVA Conext™ CL photovoltaic grid tie inverter
Conext™ CL 25000E	The information provided is specific to the 25 kVA Conext™ CL photovoltaic grid tie inverter

Abbreviations and Acronyms

Term	Definition/description
AC	Alternating Current
ADC	Analog to Digital Converter
Cap	Capacitive
DC	Direct Current
DSP	Digital Signal Processing
EOL	End Of Life
GND	Ground
IEC	International Electrotechnical Commission
Ind	Inductive
IP	Ingress protection
I_{SC}	Short circuit current rating of a PV panel under STC. (See STC, below)
$I_{SC\ max}$	Absolute maximum short circuit current permitted from the PV array

Term	Definition/description
L1	AC Line 1
L2	AC Line 2
L3	AC Line 3
LCD	Liquid Crystal Display
LED	Light Emitting Diode (indicator light)
LVRT	Low Voltage Ride Through
MPP	Maximum Power Point
MPPT	Maximum Power Point Tracking
N	Neutral
NEC	National Electrical Code
NC	Normally Closed
NO	Normally Open
OD	Outer Diameter
OOCP	Output Over Current Protection
P	Active Power
PE	Protective Earth (ground)
P_n	Real power nominal
P_m	Percentage of Rated Power
Po	Output power
PPE	Personal Protective Equipment
PV	Photovoltaic
Q	Reactive power
RCD	Residual Current Detection
RCMU	Residual Current Monitoring Unit
RPO	Remote Power Off
SELV	Safety Extra Low Voltage
Sn	Apparent power nominal
STC	Standard Test Conditions specific to photovoltaic panels (1000 W/m^2, light spectrum AM 1.5 and 25 °C [77 °F]); panel nameplate ratings are based on STC and may be exceeded under some conditions.
THD	Total Harmonic Distortion
UV	Ultraviolet
V	Voltage

Term	Definition/description
VAC	Volts AC
VDC	Volts DC
VMPP	Voltage at Maximum Power Point
VOC	Open circuit voltage rating of a PV panel under STC
VOC max	Absolute maximum open circuit voltage permitted from a PV array

Symbols on the Inverter

Symbols	Explanation
	Hazard of fire, arc flash, or electric shock from multiple sources
	The inverter is energized from two sources. Before opening the cover, physically isolate all the sources of power, and then wait atleast five minutes for internal capacitors to discharge.
	Refer to the Conext™ CL Installation and Operation Manual.
	Protective earthing connection
	The product works with high voltages. All work on the Conext™ CL Inverter must follow the described documentation and must comply with all the prevailing codes and regulations associated with high voltages.
	Caution, risk of danger

Product Recycling

Do not dispose of this product with general household waste!

Electric appliances marked with the symbol shown, must be professionally treated to recover, reuse, and recycle materials in order to reduce negative environmental impact. When the product is no longer usable, the consumer is legally obligated to ensure that it is collected separately under the local electronics recycling and treatment scheme.

Important Safety Instructions

READ AND SAVE THESE INSTRUCTIONS - DO NOT DISCARD

This manual contains important safety instructions that must be followed during the installation and maintenance of the Conext™ CL 20000E and Conext™ CL 25000E three phase transformerless grid tie inverters. Read and keep this manual for future reference.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

The addition of this symbol either to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

⚠ ⚠ DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in moderate or minor injury.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Safety Information

- Before using the inverter, read all the instructions and cautionary markings on the unit, and all appropriate sections of this manual.
- Use of accessories not recommended or sold by the manufacturer may result in a risk of fire, electric shock, or injury to persons.
- The inverter is designed to be permanently connected to your AC and DC electrical systems. The manufacturer recommends that all wiring be done by a certified technician or electrician to ensure adherence to the local and national electrical codes applicable in your jurisdiction.
- Do not operate the inverter if it is damaged in any way.
- This inverter (excluding the wiring box) does not have any user-serviceable parts. Do not disassemble the inverter except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the unit yourself may result in a risk of electrical shock or fire. Internal capacitors remain charged after all the power is disconnected.
- To reduce the risk of electrical shock, isolate both AC and DC power from the inverter before attempting any maintenance or cleaning or working on any components connected to the inverter.
- The inverter must be provided with an equipment-grounding conductor connected to the AC input ground.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with electrical equipment.
- The Conext™ CL inverter is energized from two sources: PV array while exposed to sunlight and the AC grid. Before opening the cover for servicing, check the system diagram to identify all the sources, de-energize, lock-out and tag-out*, and wait for at least five minutes for the internal capacitors to discharge completely.

  *It may be noted that, lock-out and tag-out instructions does not hold good during firmware upgrade as either AC grid supply or DC power supply is required to upgrade the firmware.
- The Conext™ CL inverter employs field adjustable voltage and frequency set points and time delays that are factory set in compliance with local utility and safety requirements. This can be changed only by qualified personnel with approval by both the local utility and equipment owner.
- Before servicing, test the inverter using a properly rated meter, rated to at least 1000 VDC and 600 VAC to make sure all the circuits are de-energized.
- Do not use the Conext™ CL inverter in connection with life support systems, medical equipment, or where human life or medical property could be at stake.
- Use the inverter only in grid-interconnected PV systems.
- A person with pacemaker must avoid coming in the close proximity of the inverter.
- In outdoor installations, do not open the wiring box cover when humidity is higher(>95%), during snow fall, rain fall or during any other adverse environmental conditions.
- Do not install the inverter in a zero-clearance or in unventilated compartments.

- The Conext™ CL must be used only in countries specified by Schneider Electric (contact Schneider Electric for the latest list of approved countries).
- Ensure to operate all the components within the permitted range.
- Do not attempt to modify/replace/remove the components and protective barriers that are not supplied with the package, unless otherwise specified in this manual.
- Do not use grounded PV arrays with Conext™ CL inverters.

The term “qualified personnel” is defined on page iii of this manual. Personnel must be equipped with appropriate PPE and follow standard electrical work practices. The inverter is energized from the AC grid and PV circuits on the DC side. Before servicing the inverter or accessing the wiring box, isolate all the sources and wait at least five minutes to allow internal circuits to discharge. Ensure that all the components inside the wiring box have attained safe temperature before accessing the internal components.

Operating the RPO (Remote Power Off) circuit or switching off the DC disconnect does not remove the DC and AC power from the inverter. The internal parts and the external wiring remain live unless the PV and AC circuits are physically isolated.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND ARC FLASH FROM MULTIPLE SOURCES

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Never operate energized with covers removed.
- The Conext™ Inverter is energized from two sources. Before opening cover, disconnect all sources of power, and then wait at least five minutes for internal capacitors to discharge.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors and covers, before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, AND ARC FLASH

The inverter is not user serviceable. To be installed and serviced by qualified personnel, equipped with appropriate personal protective equipment and following safe electrical work practices.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

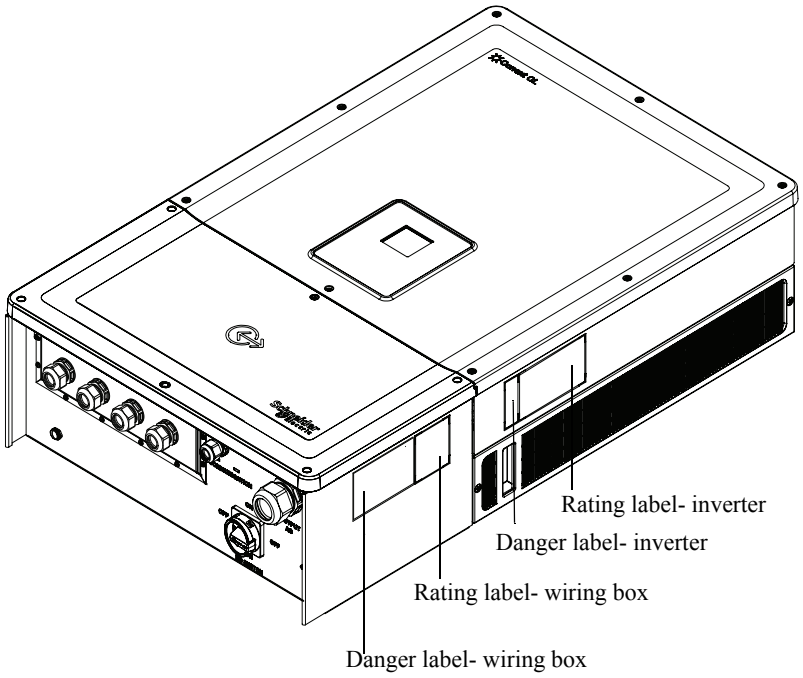
HAZARD OF ELECTRIC SHOCK AND EXPLOSION

- Disconnect all the power sources before making any connection.
- Connect the communication ports to Safety Extra Low Voltage (SELV) circuits only.

Failure to follow these instructions can result in death or serious injury.

Safety and Rating labels

The safety labels are on the right side of the inverter and wiring box as shown in the figure below.



Safety equipment

Qualified service personnel must be equipped with appropriate Personal Protective Equipment (PPE) that include, but are not necessarily limited to the following:

- Safety gloves
- Safety glasses

- Composite-toe safety boots
- Safety hard hats
- Double-insulated tools
- Appropriate meter to verify that the circuits are de-energized (1000 volts DC or 600 volts AC rated, minimum)

Check the local safety regulations for other requirements.

Contents

Figures

Tables

1 Introduction

Chapter 1, “Introduction” provides information about Conext™ CL 20000E and Conext™ CL 25000E three phase grid tie inverters.

It contains information about:

- Description of Conext Grid Tie Solar Inverter
- Key Features
- Block Diagram
- Physical Features
- Air Ventilation
- Bottom view of Wiring box

Description of Conext Grid Tie Solar Inverter

Conext™ CL Inverter is a three phase transformerless string inverter designed for high efficiency, easy installation and maximum yield. The inverter converts the solar electric (photovoltaic or PV) power into utility grade electricity that can be used for commercial or residential applications.

The inverter is designed to collect maximum available energy from the PV array by constantly adjusting its output power to track maximum power point (MPP) of the PV array. The inverter has two MPPT channels (MPPT1 and MPPT2). A maximum of four string inputs can be connected to each independent MPPT channels. The two independent PV arrays can operate at different peak power points, to capture the maximum possible energy. The inverter accommodates PV arrays with open circuit voltages up to 1000 VDC.

Conext™ CL is a transformerless design and therefore has no galvanic isolation.

Figure 1-1 shows the major components of a typical PV grid-tie installation, the energy flow in a system using Conext™ CL inverter, and the typical wiring box components.

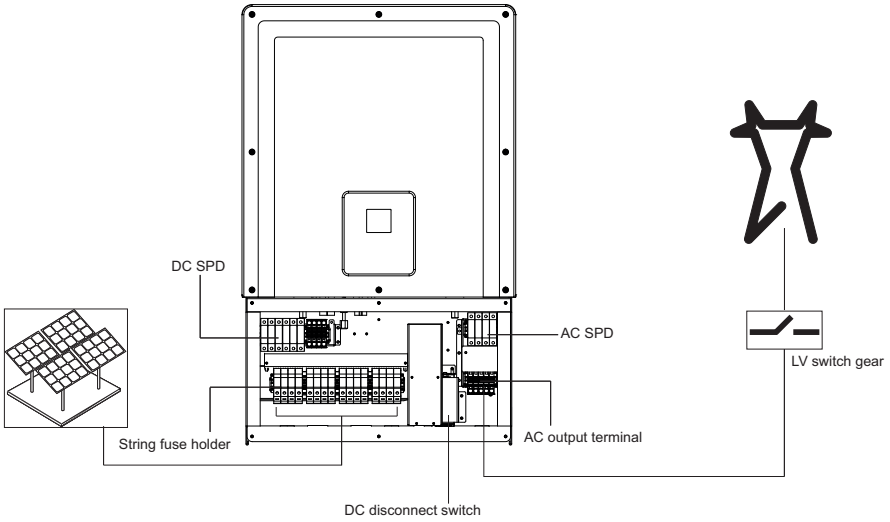


Figure 1-1 **Typical Installation (Optimum plus Configuration)**

For installation details, see **Installation and Configuration** on page 2-1.

Key Features

Inverter

- Power rating:
  - Conext™ CL 20000E inverter: 20 kVA (1000 VDC systems)
  - Conext™ CL 25000E inverter: 25 kVA (1000 VDC systems)
- PV compatibility: Designed to work with Mono- Crystalline or Poly- Crystalline panel
- Three-phase (3-Phase + N + PE [ground]), four wire, grid-tie, transformerless
- Wide MPPT voltage range
  - 350- 800 VDC for 20 KVA
  - 430- 800 VDC for 25 KVA
- Supports high array to inverter ratio (over- panelling)
- Two independent MPP Trackers with option to combine together
- Energy harvest (MPPT) efficiency: >99%
- Fast sweep MPPT tracking
- Maximum power conversion efficiency: >98%
- Power factor adjustment range: 0.8 capacitive to 0.8 inductive
- Low AC output current distortion (THD < 3%) @ nominal power
- IP65 (electronics)/IP54 (rear portion) protection class for installation in outdoor environments
- -25 to 60° C Operating temperature range
- Flexible installation: Inverter and wiring box separable installation
- Dry Contact (Multi function) relay
- Remote Power Off (RPO)
- Modbus RS485 and Modbus TCP communications
- USB host for local firmware upgrade
- Custom data Logging (User configurable via Webpage)
- 3” (diagonally) graphical display (LCD) with integrated 7- button control panel
- Embedded Web server via Ethernet (TCP/IP)

Wiring Box*

- Integrated DC switch
- Touch safe fuse holder for PV string protection
- AC and DC Surge Protection (SPD) & Monitoring
- Bottom cable entry for easy installation
- AC cable termination using cage clamp terminal block
- Tool free DC cable termination using PV connectors

*For more details about different wiring box configuration and features, refer **Installation and Configuration** on page 2-1.

Block Diagram

Figure 1-2 shows the block diagram of Conext™ CL 20000E and Conext™ CL 25000 E inverters. Figure 1-3 and Figure 1-4 shows the location of important physical features of the inverter.

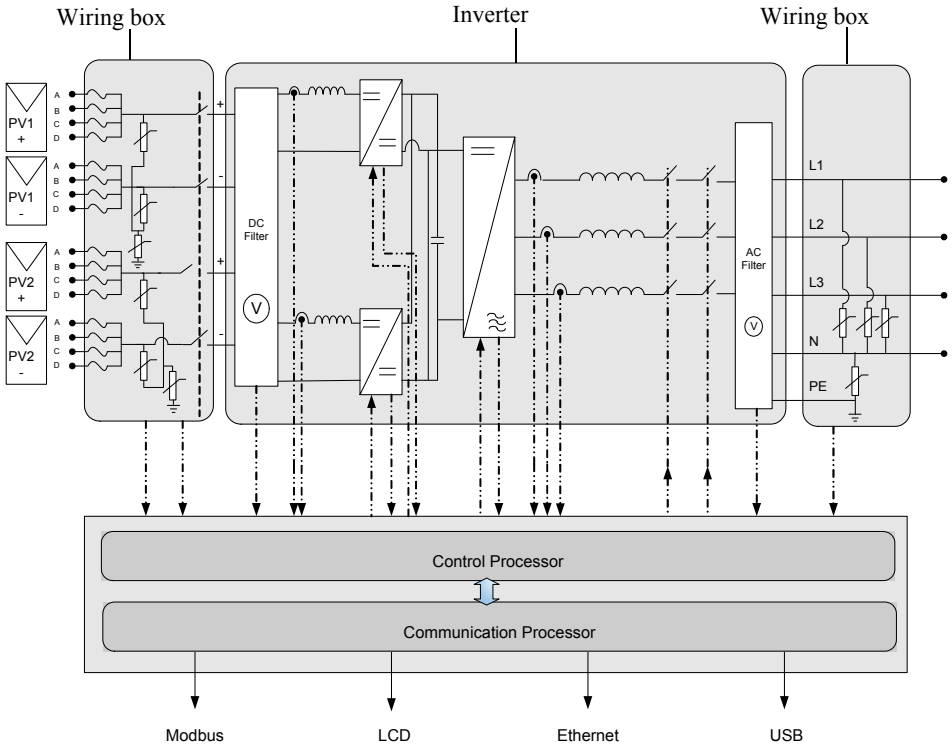


Figure 1-2 **Block diagram of Conext™ CL 20000E and 25000E models**

Physical Features

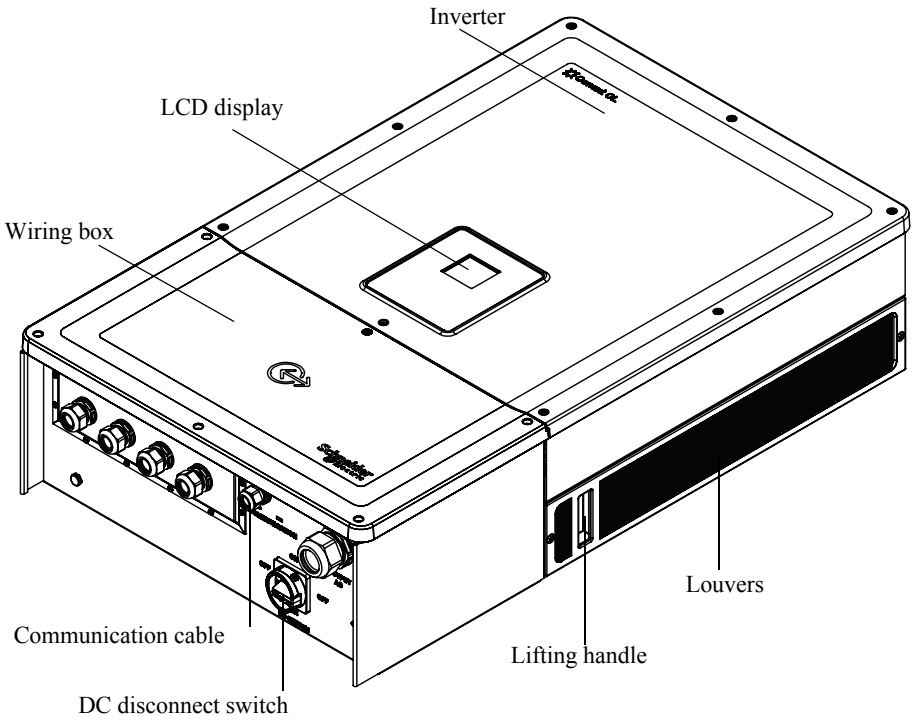


Figure 1-3 **Location of physical features of the inverter and the wiring box- right side view**

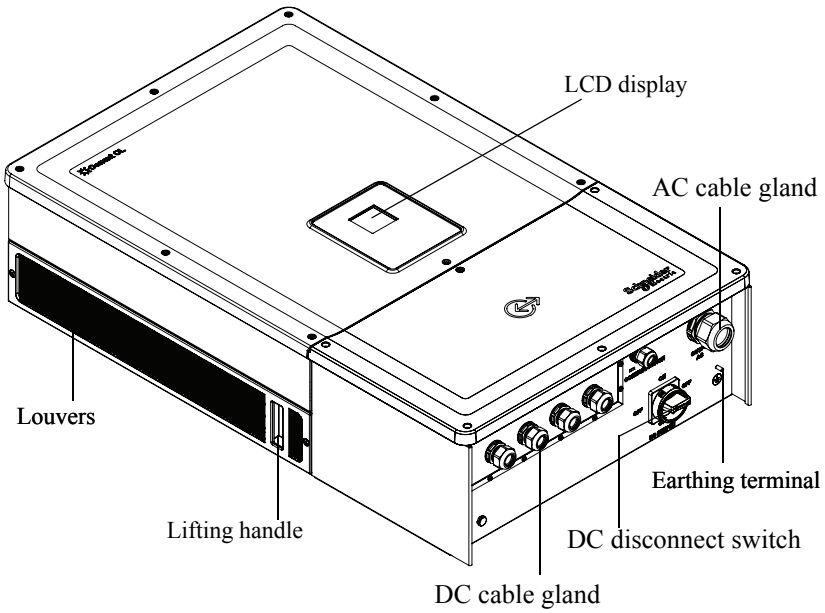


Figure 1-4 **Location of physical features of the inverter and the wiring box- left side view**

Air Ventilation

The air intake and outlet are located at the sides of the inverter, as shown in Figure 1-5.

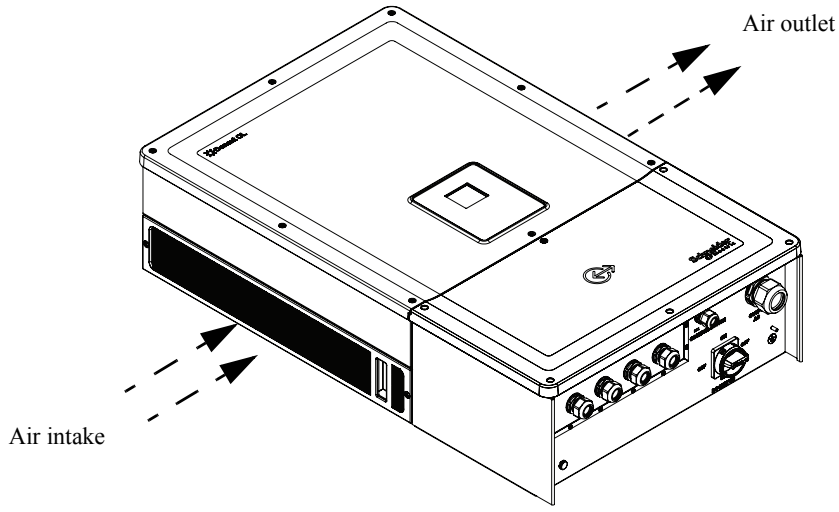


Figure 1-5 **Cooling arrangement of the inverter**

Bottom view of Wiring box

The Ingress Protection rated cable glands/PV connectors are located at the bottom of the wiring box, as shown in Figure 1-6.

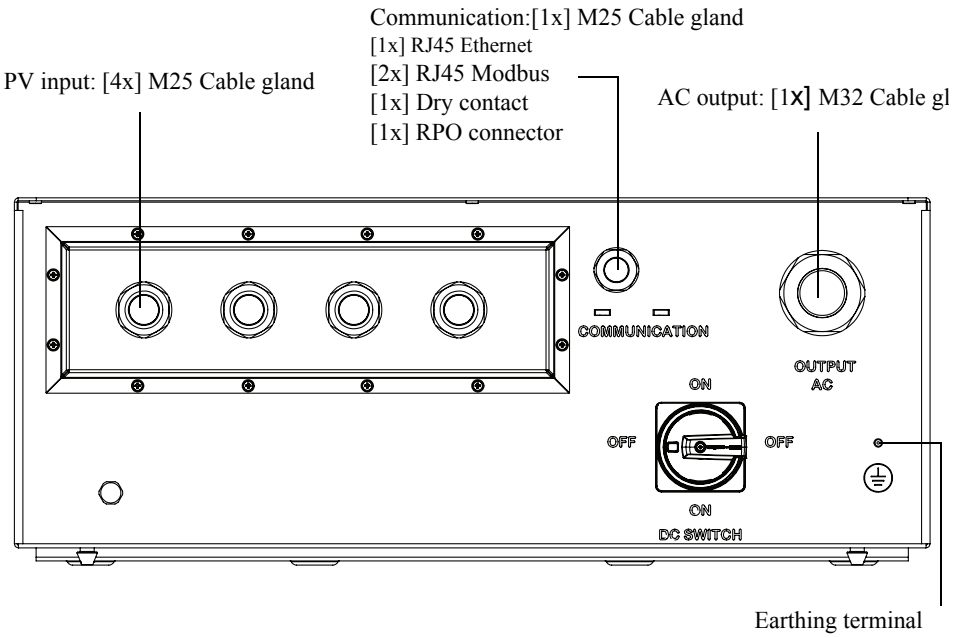


Figure 1-6 **Bottom view of the wiring box**

NOTICE

RISK OF EQUIPMENT DAMAGE

Replace any plugs that are removed and unused, to prevent water from entering the wiring box.

Failure to follow these instructions can result in equipment damage.

Item	See this section:
AC output	**AC Wiring** on page 2-37
Communication interface	**Communication Interface** on page 2-42
PV input	**Planning** on page 2-32
Earthing terminal	**Earthing Terminal** on page 2-41

2 Installation and Configuration

Chapter 2, “Installation and Configuration” provides information and procedures for installing and configuring the inverter and the wiring box.

It contains information about

- Transportation
- Lifting
- Package Inspection
- Planning for Installation
- Dimensions
- Wiring Box Configurations
- Tools Required
- Torque Table
- Mounting
- Planning and Wiring
- Communication Interface
- RPO and Dry contact relay connection
- PV String Protection
- Surge Protection Device Monitoring
- Web Interface

Transportation

Conext™ CL consists of two packaging boxes, the inverter and the wiring box. The transportation of the equipment should be carried out without any abnormal vibration or shock that may damage any of the internal parts.

Lifting

⚠CAUTION

CRUSH HAZARD

- The service person should be equipped with appropriate PPE.
- Lift the inverter with the help of another person.

Failure to follow these instructions can result in moderate or serious injury.

The inverter and the wiring box weighs approximately 119.05 lbs (54 kg) and 33.07 lbs (15 kg) respectively. It is recommended to ensure all necessary precautions for personal as well as equipment safety while lifting, to avoid any mishandling and physical injury.

Do not attempt to lift multiple inverters together.

Package Inspection

1. Check the wiring box and the inverter for damage during shipping. If it is damaged beyond cosmetic damage, contact Schneider Electric.
2. Check the nameplate label on the wiring box and the inverter for correctness of the model ordered, see Figure 2-2 and Figure 2-5.
3. Fill in **Information About Your System** on page C-1.

Wiring box

Scope of delivery

While unpacking the wiring box, verify that the package includes all the items as listed in the table below.

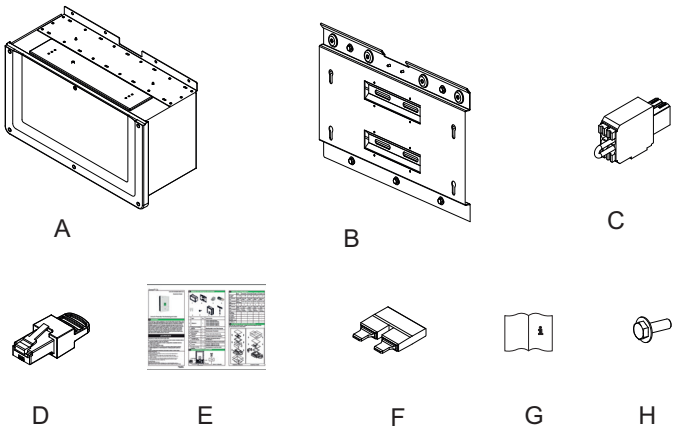


Figure 2-1 **Packing list- Wiring box**

Table 2-1 Packing list- Wiring box

	Item/ Description	Quantity
A	Wiring box	1
B	Wiring box mounting bracket	1
C	Relay and RPO connector	1
D	Modbus RC terminator (RJ45 plug)	1
E	Quick start guide	1
F	MPPT shorting jumper	2
G	Installation and Operation manual	1
H	M8 screws (8 mm) for fastening wiring box to the bracket	4

Wiring box Nameplate

The nameplate* affixed to the wiring box provides the following information:

- Model name
- Configuration
- Enclosure type
- Part number

*A typical nameplate is as shown below.

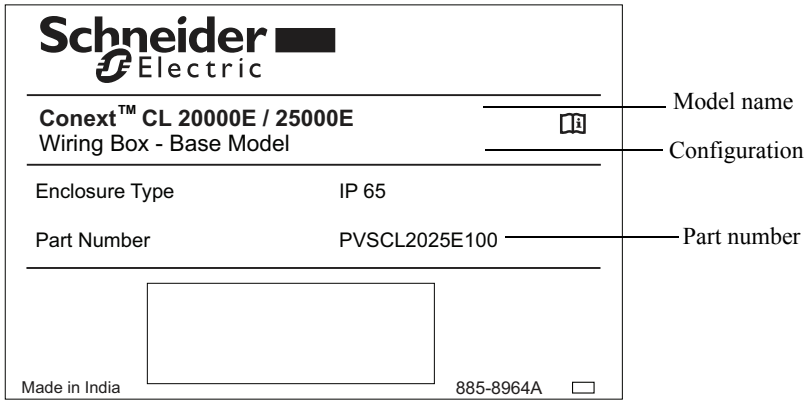


Figure 2-2 **Nameplate label- Wiring box**

Note: Technical data in this manual is subject to change. Always refer the label affixed on the product.

Wiring box SKU/ Order Code **	Configuration
PVSCL2025E100	Base
PVSCL2025E200	Essential
PVSCL2025E201	Essential plus
PVSCL2025E300	Optimum
PVSCL2025E301	Optimum plus

** Refer wiring box name plate for the correct part number ordered.

Inverter

Scope of delivery

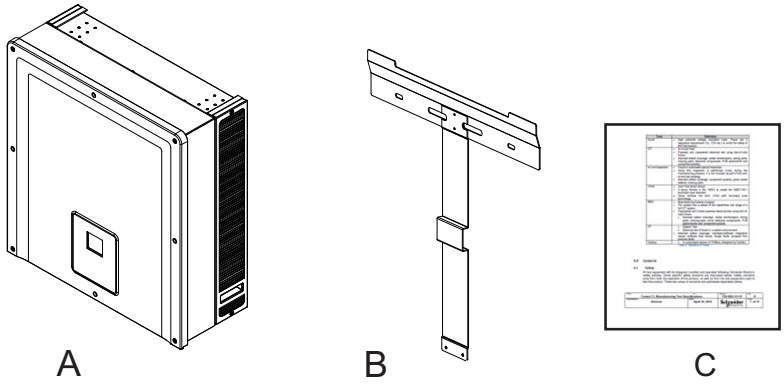


Figure 2-3 **Packing list- Inverter**

Table 2-2 Packing list- Inverter

	Item/Description	Quantity
A	Inverter	1
B	Inverter mounting bracket	1
C	Routine test report	1

Packaging label

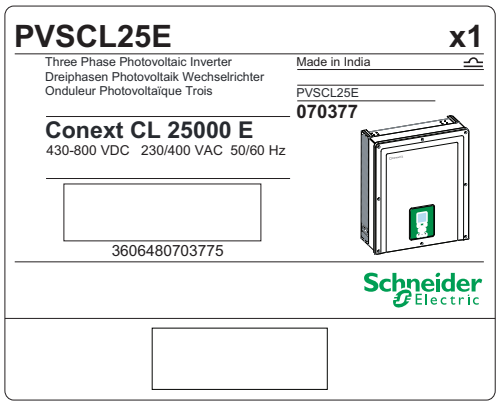


Figure 2-4 **Inverter packaging label**

Nameplate

The nameplate* shown below is affixed to the inverter and provides the following information:

- Model name
- DC input data
- AC output data
- Part number
- Certification

*A typical nameplate is as shown below in Figure 2-5.

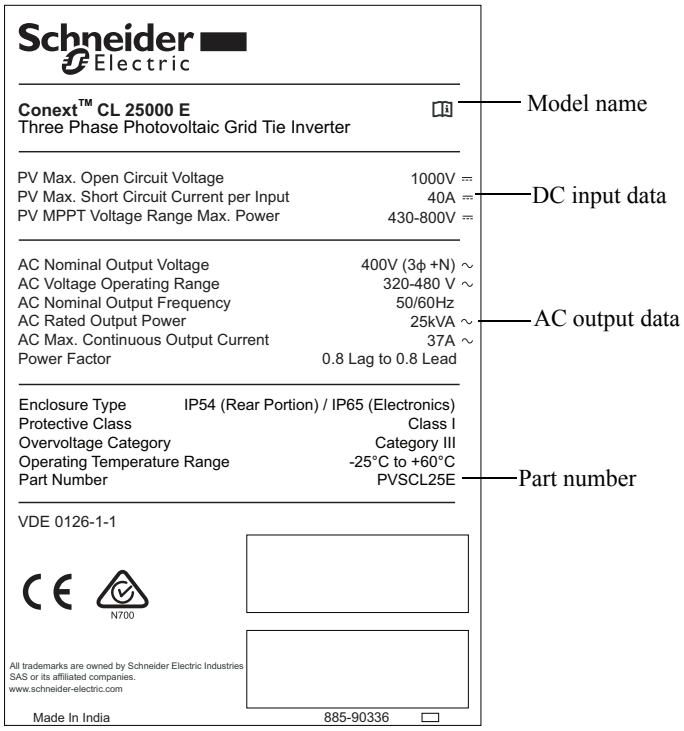


Figure 2-5 **Inverter nameplate label**

Note: Technical data in this manual is subject to change. Always refer the label affixed on the product.

Planning for Installation

Installation Overview

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

Conext™ CL inverter must be installed and serviced only by qualified personnel equipped with appropriate personal protective equipment and following safe electrical work practice and all applicable code requirements.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

In the Base model, string fuse protection and DC disconnect switch are not available. Ensure that suitable external protection is installed as per local installation standards.

Failure to follow these instructions can result in equipment damage.

Installation Options

Conext™ CL inverter can be installed as a single inverter with a maximum of four PV strings connected to each MPPT. In the Base model wiring box, when more than two strings are connected to each MPPT, the use of a suitably rated external fuse is recommended.The inverter can also be installed in a multiple inverter system. If multiple inverters are used, each of the inverter must be wired to an independent set of PV array. To enable communication between Conext™ CL inverters, network cabling must be installed to the RJ45 ports.

Installation Codes

It is the responsibility of the installer to ensure adherence to all necessary installation codes as applicable to the specific location of installation.

Planning

Planning for a system requires a complete understanding of all the components that are involved to successfully install the inverter. This helps to achieve optimum performance and reliability, and to meet applicable installation codes.

Location

The inverter is rated and certified for both indoor and outdoor installation. Conext™ CL inverter uses an IP65 (electronics)/IP54 (rear portion) rated enclosure.

Debris Free

Excessive debris (such as dust, leaves, and cobwebs) can accumulate at the rear side of the inverter, interfering with the wiring connections and ventilation.

NOTICE

RISK OF EQUIPMENT DAMAGE

Mount the inverter in a dust free environment where debris cannot accumulate which may interfere with the connections and ventilation.

Failure to follow these instructions can result in equipment damage.

Clearance

Consider adequate ventilation and service access when installing the inverter. Refer to the **Wiring Box Configurations** on page 2-13.

Environmental Requirements

⚠WARNING

HAZARD OF FIRE

Keep the area under and around the inverter clear of flammable material and debris.

Failure to follow these instructions can result in death or serious injury.

- The enclosure of the inverter can tolerate some ingress of dust on rear enclosure, however, minimizing the exposure to dust will improve the performance and life of the inverter.
- While the IP65 (electronics)/ IP54 (rear portion) rated protection of the inverter protects it from rain and water sprayed on the inverter from a nozzle, it is recommended that outdoor installations be located away from lawn sprinklers and other sources of spray such as a hose or pressure washer.
- The inverter is designed to operate in a -25 °C to 60 °C (-13 °F to 140 °F) ambient environment, however, the optimal power harvest is achieved up to an ambient temperature of 45 °C (113°F). Above 45 °C, the power may derate.
- It is recommended to install the inverter away from direct exposure to sunlight; or else it might result in the following consequences:
  - output power limitation (loss of production).
  - premature ageing of electronic components.
  - premature ageing of mechanical components and the display interface.
- The mounting location and structure must be suitable to withstand the weight of the inverter and the wiring box.
- Install the inverter in a location where the DC disconnect switches are easily accessible.
- Install the inverter with the display located at an eye level so that the display and LED status are seen easily.

⚠CAUTION

CRUSH OR STRAIN HAZARD

- The inverter and wiring box together weighs approximately 70 kg (154.3 lbs). Ensure that the surface on which the inverter will be mounted, and the mounting hardware used, are strong enough to withstand this weight.
- Use proper lifting techniques in accordance with local workplace safety rules, and always use assistance when moving, lifting and installing the inverter.

Failure to follow these instructions can result in injury, or equipment damage.

NOTICE

RISK OF EQUIPMENT DAMAGE

- The enclosure of the inverter protects the internal parts from rain; however, outdoor installations must be located away from the lawn sprinklers and other sources of spray such as a garden hose or a pressure washer.
- Direct sunlight on the inverter could raise internal temperatures, causing a reduction of output power during hot weather. It is recommended to install the inverter in a shaded area, away from direct exposure to sunlight for better performance.
- The performance of the product might be impaired without adequate ventilation. Allow a clearance of at least 600 mm (23.6 in) at the sides of the inverter.
- Do not obstruct the air intakes and outlets.

Failure to follow these instructions can result in equipment damage.

Improper Usage

It is recommended not to install Conext™ CL inverter under the following conditions:

- Environment with flammable conditions.
- Usage of substandard safety devices along with the equipment.
- Installation of the inverter in conjunction with other equipment which is not recommended in this user manual or not meant for this application.
- Installation or handling the inverter without proper understanding of the procedure specified in this manual.
- Improper installation clearance between adjacent inverters.
- In corrosive environments, including but not limited to acidic rain and chemical plants.

⚠ ⚠ DANGER

HAZARD OF CRUSH OR STRAIN

Follow the correct procedures when lifting, moving, or mounting the inverter.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

When removing the inverter, place it on cardboard to prevent cosmetic damage to the back surface.

Failure to follow these instructions can result in equipment damage.

Correct Mounting Position

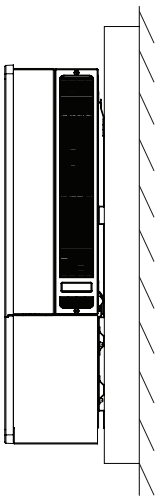
NOTICE

RISK OF EQUIPMENT DAMAGE

- Do not install the inverter horizontally.
- Local codes might impose additional mounting requirements in case of earthquake or other high-risk areas.

Failure to follow these instructions can result in poor performance or damage to equipment.

The correct mounting position is as shown in Figure 2-6. Examples of incorrect positions are shown in Figure 2-7. The inverter does not require any clearance at the rear side and it may be mounted flat on a vertical surface. Install the display interface at eye level for optimum user comfort.



Vertical installation

Figure 2-6 **Correct mounting position**

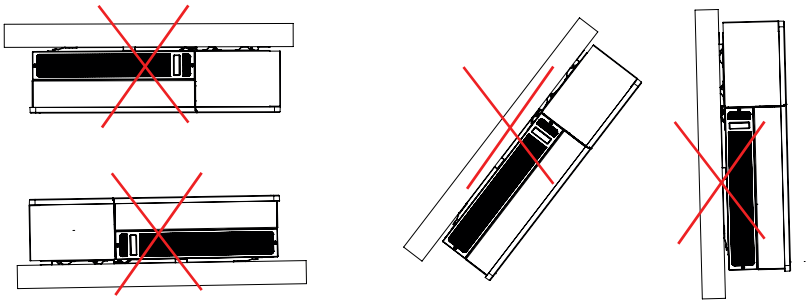


Figure 2-7 **Incorrect mounting positions**

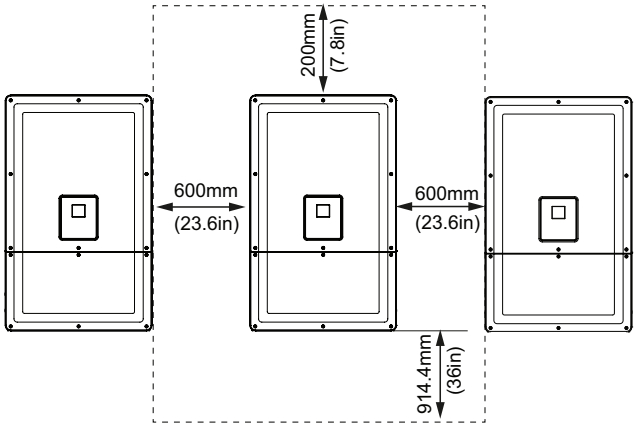


Figure 2-8 **Proper installation distances of the inverter**

For side by side inverter installations, maintain a minimum distance of 600 mm (23.6 in) between the inverters to minimize the possibility of power derating.

Dimensions

The dimensions of the inverter are as shown in Figure 2-9.

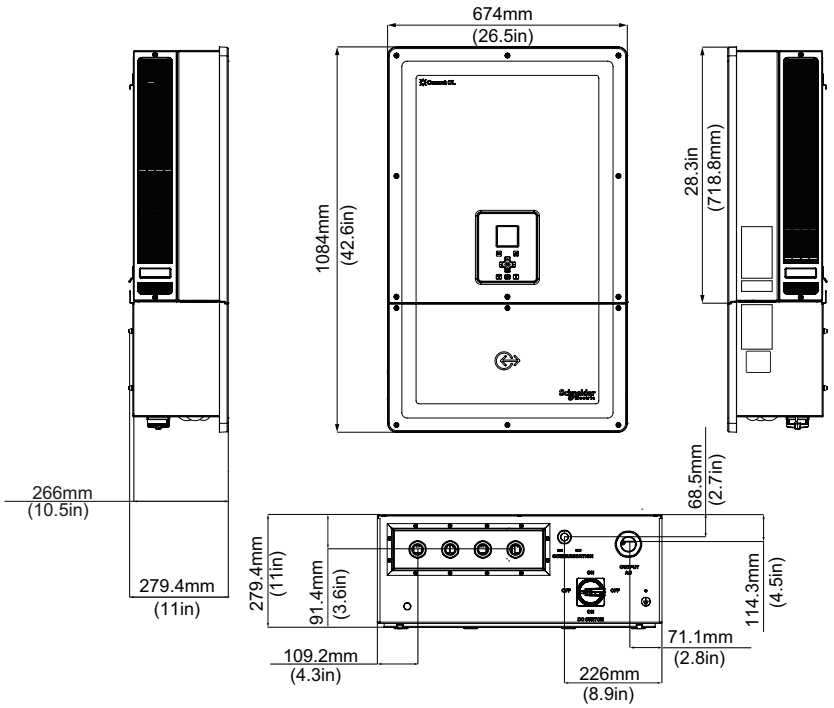


Figure 2-9 **Views and dimensions of the inverter and the wiring box (Essential/ Optimum)**

Wiring Box Configurations

There are five models of the wiring box available for Conext™ CL 20000E and Conext™ CL 25000E products.

		Base	**Essential**	**Essential plus**	**Optimum**	**Optimum plus**
Cable Entry	Bottom	✓	✓	✓	✓	✓
DC connection	Conductor size	4 to 20 mm^2	4 to 20 mm^2	4 to 20 mm^2	4 to 20 mm^2	4 to 20 mm^2
	Connection type	Spring connector	Fuse holder, screw type	Fuse holder, PV connector*	Fuse holder, screw type	Fuse holder, PV connector*
	Single MPPT configuration	✓	✓	✓	✓	✓
DC cable gland entry thread size		M25**	M25**	PV connector*	M25**	PV connector*
AC connection	Conductor size	4 to 20 mm^2	4to 20 mm^2	4 to 20 mm^2	4 to 20 mm^2	4 to 20 mm^2
	Connection type	Spring connector	Spring connector	Spring connector	Spring connector	Spring connector
AC cable gland entry thread size		M32***	M32***	M32***	M32***	M32***
DC protection	Touch-safe fuse holder		✓	✓	✓	✓
	DC switch		✓	✓	✓	✓
	DC SPD (Two)				✓	✓
AC protection	AC SPD (One)				✓	✓

* PV connectors:

- (8x) male connector.
- (8x) female connector.

** Applicable only for 4 to 10 mm^2 single insulated copper cable.

*** Applicable only for 10 mm^2 (max) single insulated copper cable.

The different features of the five wiring box layouts are as shown below:

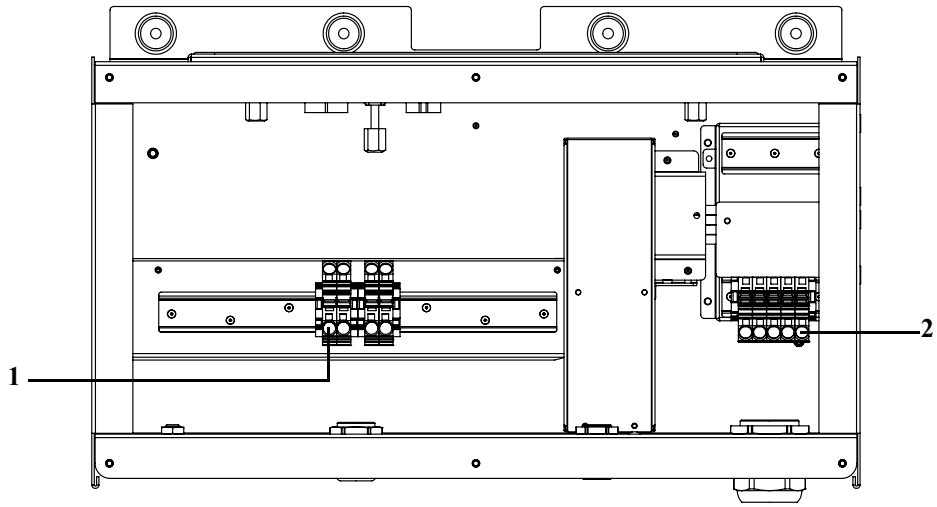


Figure 2-10 **Wiring box- Base (PVSCL2025E100)**

Table 2-3 Wiring box- Base (PVSCL2025E100)

Ref:	Description
1	DC terminal block
2	AC terminal block

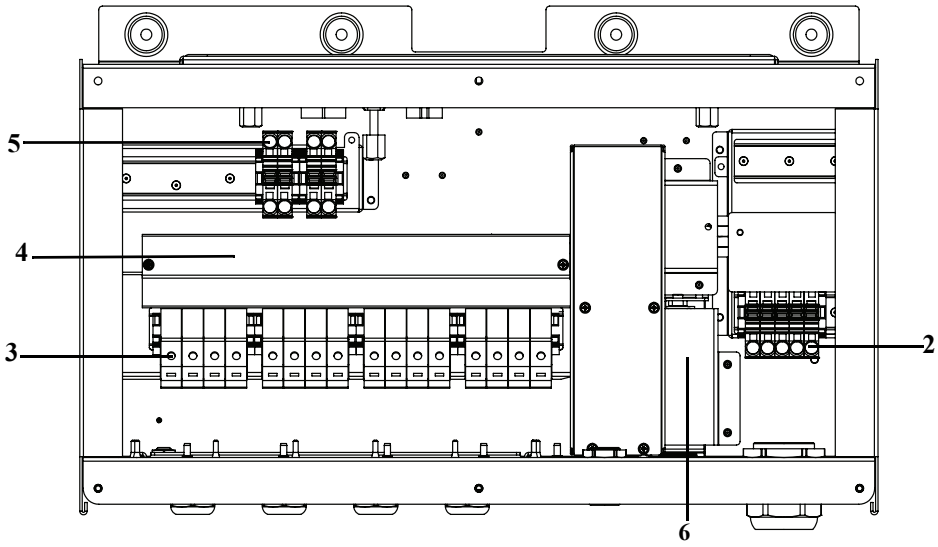


Figure 2-11 **Wiring box- Essential (PVSCL2025E200)**

Table 2-4 Wiring box- Essential (PVSCL2025E200)

Ref:	Description
2	AC terminal block
3	DC fuse holder
4	Fuse holder insulator
5	MPPT shorting terminal block
6	DC disconnect switch

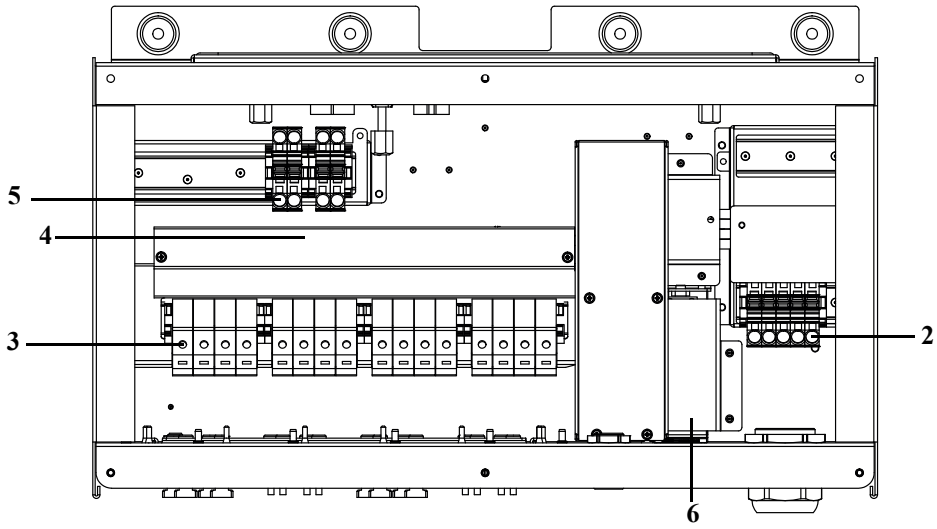


Figure 2-12 **Wiring box- Essential plus (PVSCL2025E201)**

Table 2-5 Wiring box- Essential plus(PVSCL2025E201)

Ref:	Description
2	AC terminal block
3	DC fuse holder
4	Fuse holder insulator
5	MPPT shorting terminal block
6	DC disconnect switch

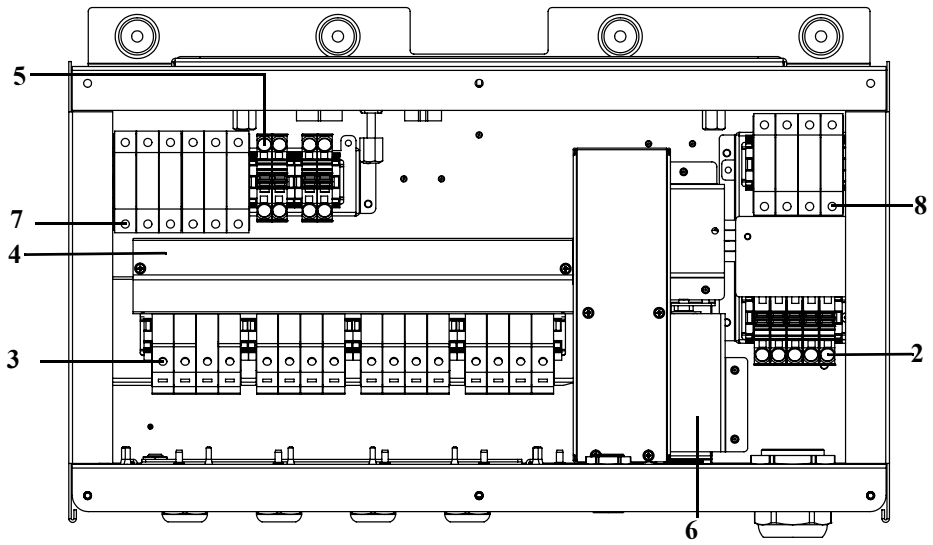


Figure 2-13 **Wiring box- Optimum (PVSCL2025E300)**

Table 2-6 Wiring box- Optimum (PVSCL2025E300)

Ref:	Description
2	AC terminal block
3	DC fuse holder
4	Fuse holder insulator
5	MPPT shorting terminal block
6	DC disconnect switch
7	DC SPD - Surge protection device
8	AC SPD - Surge protection device

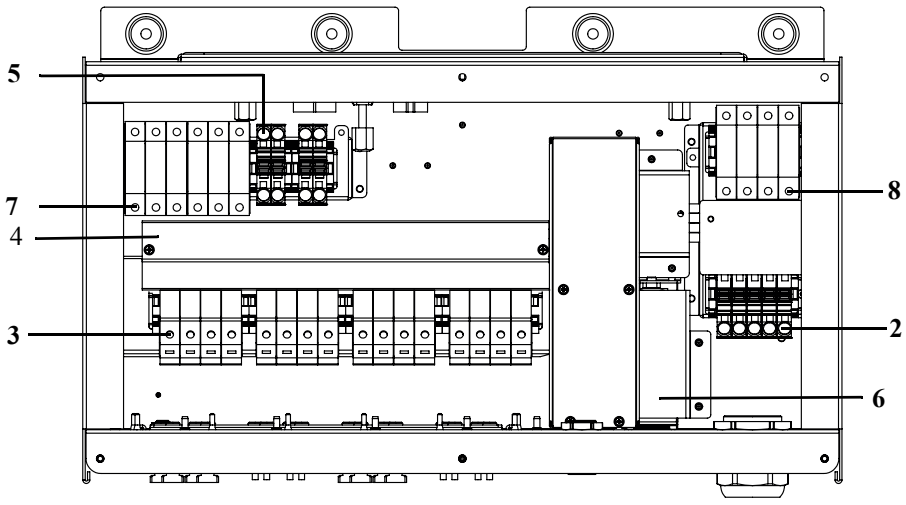


Figure 2-14 **Wiring box- Optimum plus (PVSCL2025E301)**

Table 2-7 Wiring box- Optimum plus (PVSCL2025E301)

Ref:	Description
2	AC terminal block
3	DC Fuse holder
4	Fuse holder insulator
5	MPPT shorting terminal block
6	DC disconnect switch
7	DC SPD - Surge protection device
8	AC SPD - Surge protection device

Tools Required

To install the inverter, the following tools are required:

- Slotted screwdriver set
- #2 Phillips screwdriver or power screwdriver for mounting the bracket
- Flat screw driver (~1/4" wide)
- Wire stripper and crimping tool for both AC and DC wiring
- Bubble level or Spirit level to ensure the straight installation of the mounting bracket
- Torque adjustable wrench (metric)
- Torx head screw driver T25

Torque Table

Table 2-8 Torque table

Fastener Type	Description	Torque Nm/in-lbf
M5	Wiring box front cover screw	2.75/ 24.3
M8	Wiring box and wall mount screw	6/ 53.1
M8	Inverter and Wiring box bracket screws	6/ 53.1
Guide Bushing screw	Inverter and Wiring box guide bushing locking screw	10/ 88.5
Thumb screw	Inverter and Wiring box power connector thumb screw	5/ 44.3
M6 Nut	Second protective earth connection	5/ 44.3
Phillips head (#2)	Fuse holder termination screw	3/ 26.6
M4	Wiring Box Fuse Insulator	0.75/6.6

Mounting

This section describes how to mount the inverter and the wiring box to the mounting surface.

⚠ CAUTION

CRUSH HAZARD

- Use the specified and sufficient number of screws to install the mounting brackets.
- Ensure to fasten the mounting bracket tightly to the wall or mounting structure.
- The service person should be equipped with appropriate PPE.
- Lift the inverter with the help of another person.

Failure to follow these instructions can result in minor or moderate injury.

Fastening the Mounting Plate to the Wall

To fasten the mounting plate to the wall:

Install the wiring box mounting bracket first, and then mount the inverter bracket using the locating pins.

1. Select a wall or other suitable, solid, vertical surface capable of supporting the weight of the inverter and the wiring box.
2. Maintain a minimum clearance of 914.4 mm (36”) from the ground to the bottom edge of the wiring box mounting bracket. Refer to the Figure 2-15 on page 2-19.
3. Using the five M8 screws, securely attach the wiring box mounting bracket to the mounting surface. An example of mounting on plywood, wallboard, and wall studs is shown in Figure 2-16 on page 2-20.
4. Align the inverter mounting bracket using the two alignment pins. Refer to the Figure 2-17 on page 2-21.
5. Secure the bracket to the mounting surface using two M8 screws. An example of mounting on plywood, wallboard, and wall studs is shown in Figure 2-17 on page 2-21.
6. Use a level to ensure that the mounting bracket is horizontal.

Dimensions of the Mounting Brackets

The dimensions of the mounting brackets are as shown in figure below.

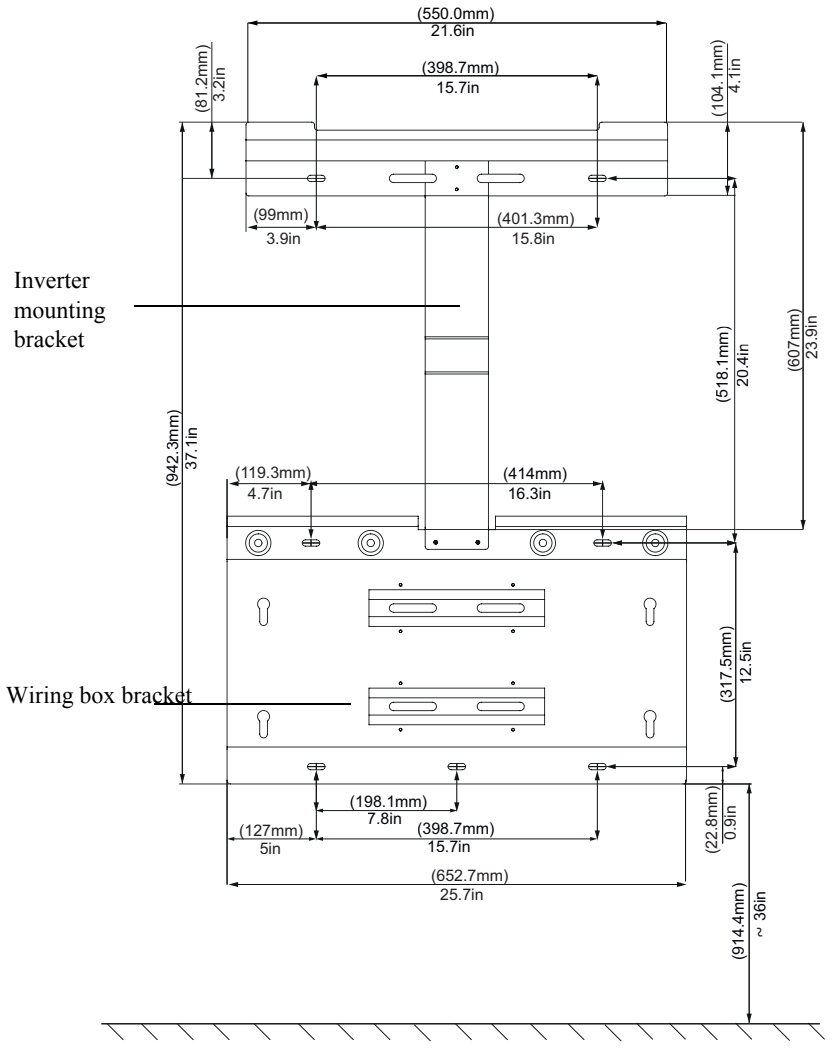


Figure 2-15 **Mounting bracket dimensions- Wiring box and Inverter**

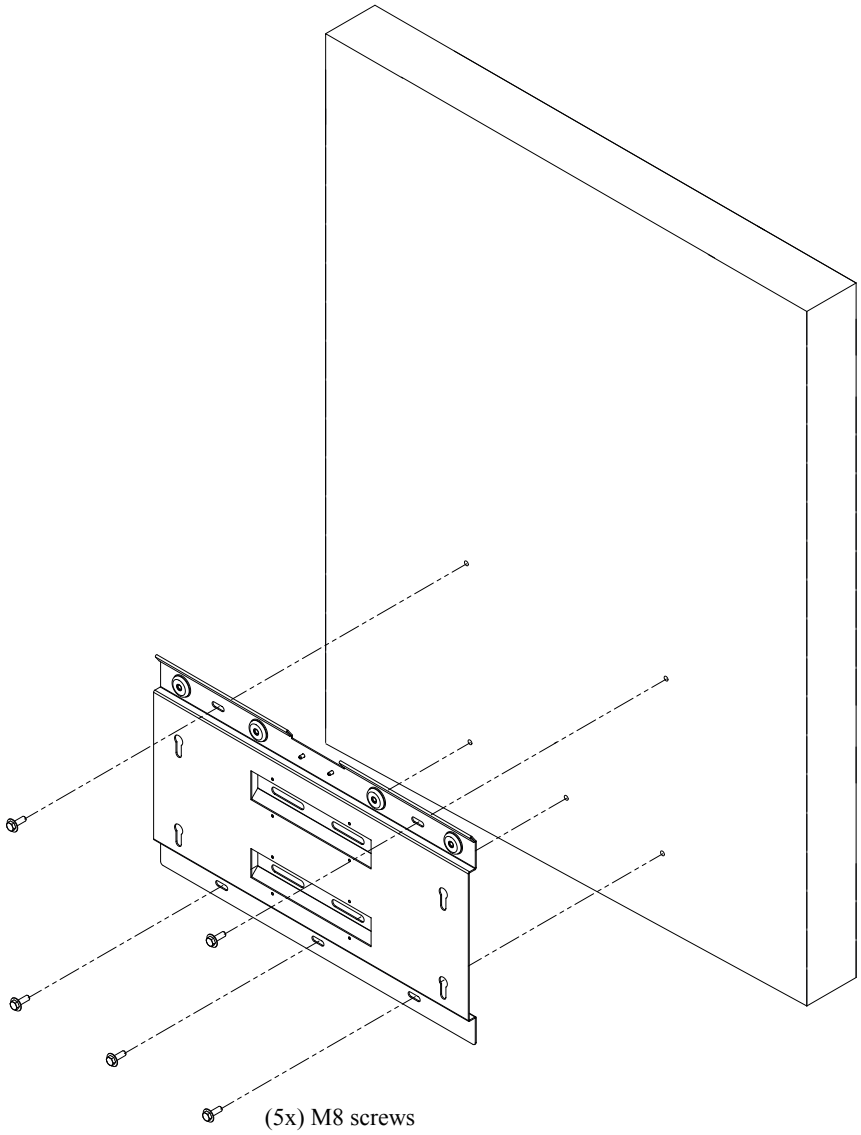


Figure 2-16 **Fastening the wiring box mounting plate to the wall**

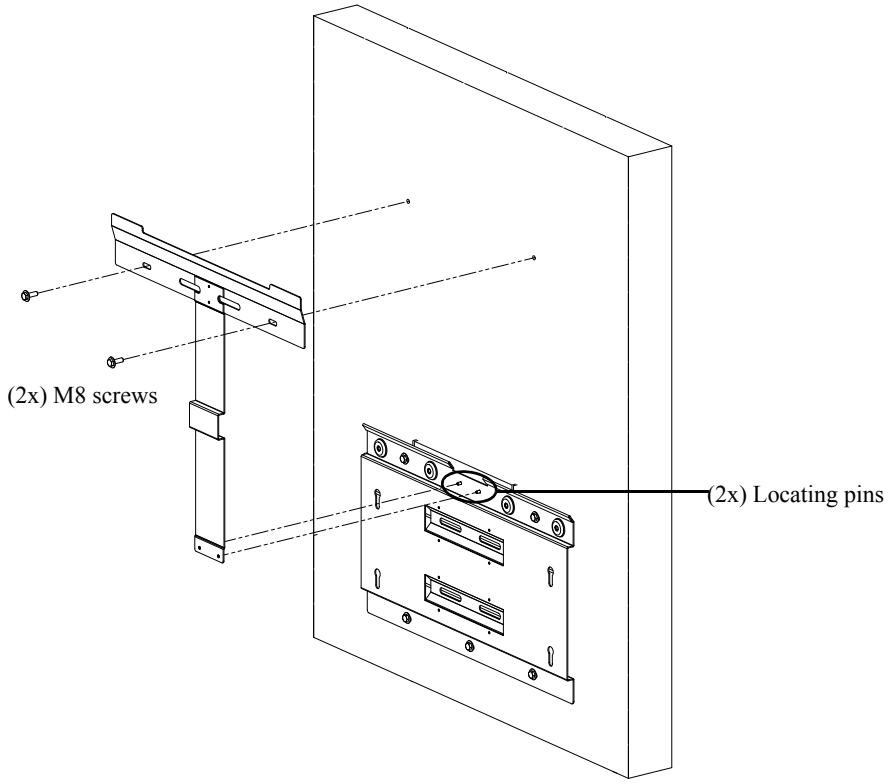


Figure 2-17 **Fastening the inverter mounting plate to the wall**

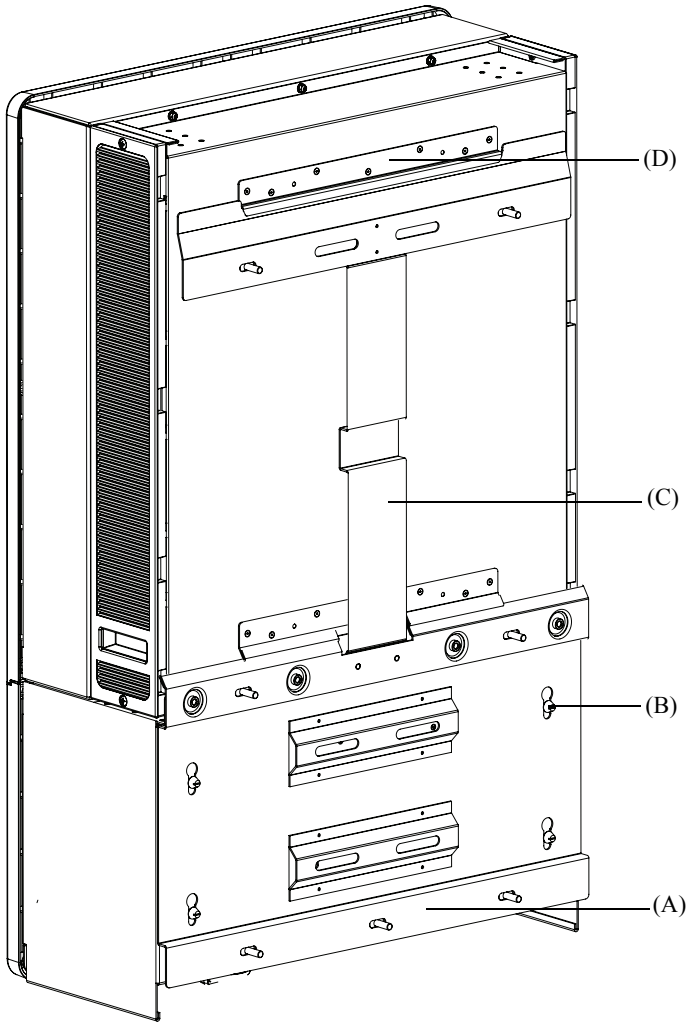


Figure 2-18 **Inverter rear view with mounting bracket**

(A) Mounting bracket- wiring box

(B) Locating pin

(C) Mounting bracket - inverter

(D) Mounting flange

Pole Mounting

Conext™ CL inverter can be mounted on a pole structure with three additional U-clamps. (not included in the package).
The ordering details for U-clamp: Part number: 3042T67 (for a pole diameter of 6”).
For more details, **http://www.mcmaster.com/#catalog/121/1564/=xcg6cl**.

The installation details for U-clamp with the inverter and wiring box mounting bracket are as shown below. The U-clamp grips the entire circumference of the pole for a secure hold. It has two locking nuts; additional hex nuts can be added.

Conext™ CL inverter is tested with McMaster U-clamps for a pole size of 6” diameter.

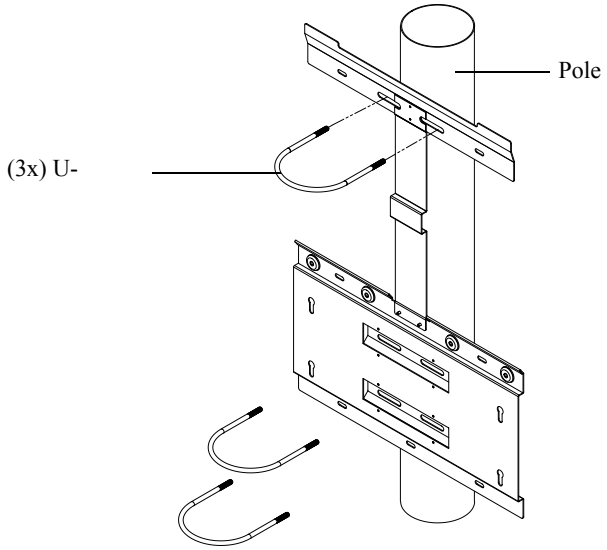


Figure 2-19 **Front view of the pole mounting installation**

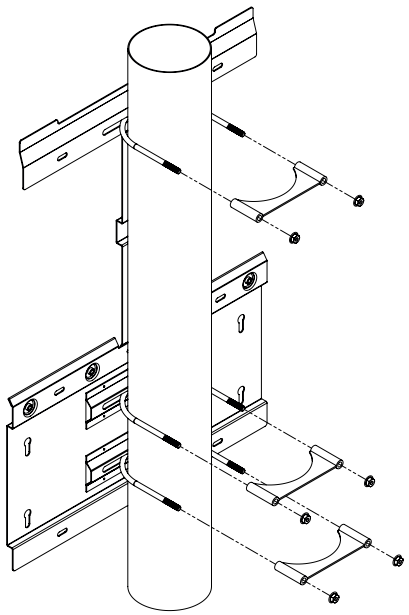


Figure 2-20 **Rear view of the pole mounting installation**

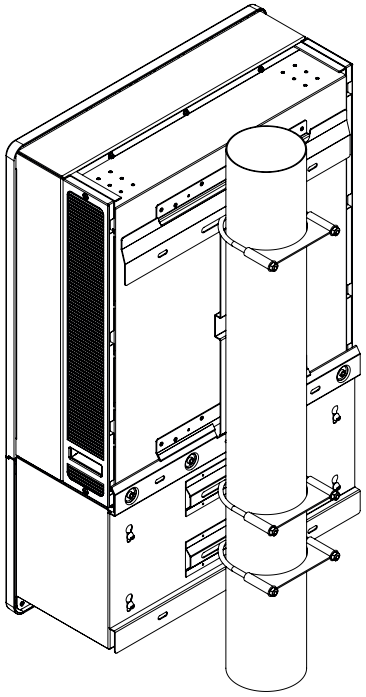


Figure 2-21 **Pole mounting- rear view with the inverter installed**

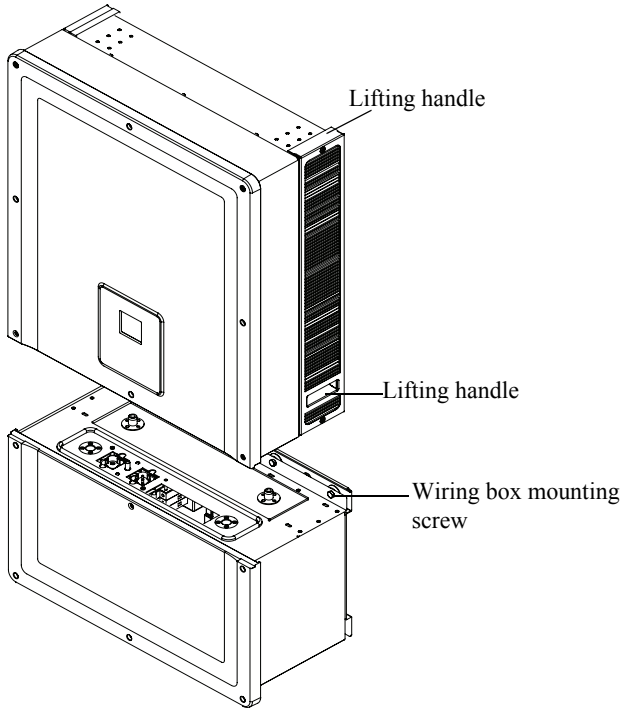


Figure 2-22 **Inverter and Wiring box- Exploded view**

Mounting the Wiring box and Inverter

To mount the wiring box

1. Align the locating pins of the wiring box to the mounting slots on the lower mounting bracket. Refer to the Figure 2-23 on page 2-26.
2. Slide down the wiring box to stay on the mounting bracket.
3. Secure the wiring box in place and tighten using the four M8 screws firmly, as shown in Figure 2-24 on page 2-27. Refer to the Table 2-8 on page 2-17 for torque values.
4. Open the front cover of the Wiring box as shown in Figure 2-25 on page 2-27.
5. Remove the connector cover by loosening the guide bushing as shown in Figure 2-26 on page 2-28.
6. Anchor the connector cover as shown in Figure 2-27 on page 2-28.

Note: This plate is required to prevent dust and water ingress, when the inverter is removed for service.

⚠CAUTION

PINCH AND CRUSH HAZARD

- Use extreme caution while lifting the inverter.
- Ensure that the inverter mounting flange fully engages with the mounting bracket.
- After placing the inverter into the mounting bracket, carefully release your hands off the lifting handle.

Failure to follow these instructions can result in minor or moderate injury.

To mount the inverter

1. Lift the inverter using the lifting provision as shown in Figure 2-22 on page 2-24.
2. Place the inverter on the mounting bracket, and ensure that the upper edge of the mounting bracket engages the flange on the upper edge at the back of the inverter. Refer to the Figure 2-18 on page 2-22.
3. Ensure that the guide bushing (2x) provided with the inverter engages with the wiring box bushing. Refer to the Figure 2-28 on page 2-29 and Figure 2-29 on page 2-29.
4. Tighten the guide bushing screw of the wiring box as shown in Figure 2-30 on page 2-30. Ensure that the inverter and the wiring box are clamped/ fixed together firmly. Refer to the Table 2-8 on page 2-17 for torque values.
5. Lock the inverter and the wiring box power connectors using the thumb screw provided as shown in Figure 2-31 on page 2-30.

Note: Ensure to use the correct torque values. Refer to the Table 2-8 on page 2–18.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, FIRE AND EQUIPMENT DAMAGE

Ensure to tighten and properly torque the power connector between the inverter and the wiring box and to avoid poor electrical contact.

Failure to follow these instructions will result in death or serious injury.

6. Complete the DC, AC, Earth wiring and Communication Interface connections as described in the following sections. Refer to the page 2–32.
7. Close the front cover as shown in Figure 2-32 on page 2-31. Ensure that the front cover is fastened correctly as per the specified torque value. For torque values, refer to the Table 2-8 on page 2-17.

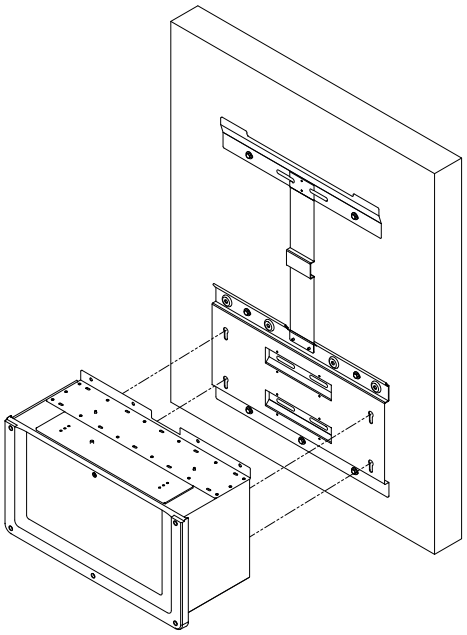


Figure 2-23 **Mounting the wiring box on the bracket**

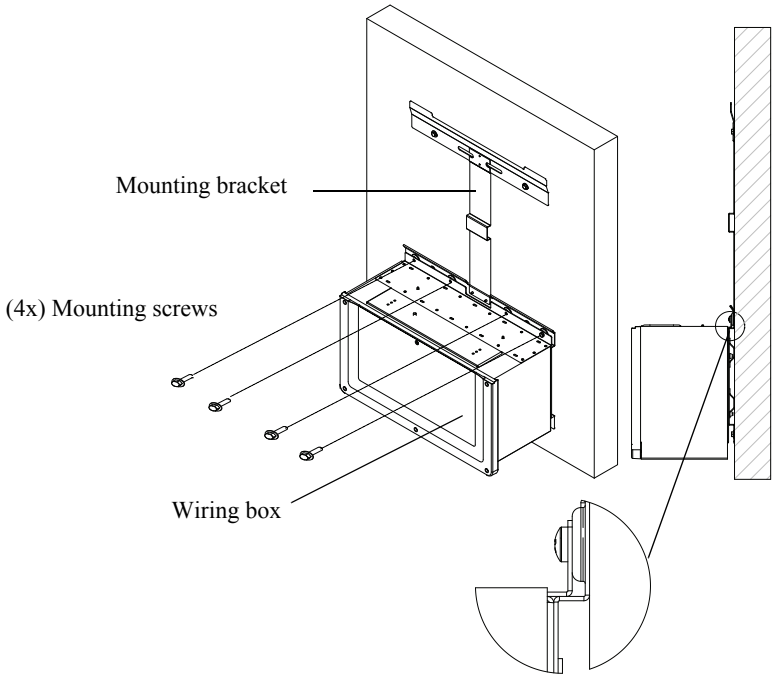


Figure 2-24 **Fastening the wiring box to the mounting bracket**

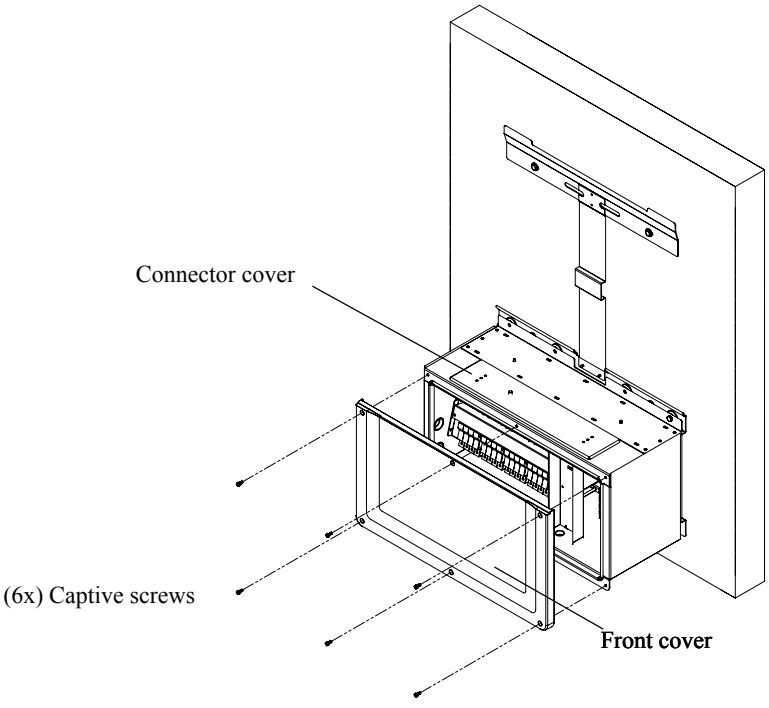


Figure 2-25 **Opening the front cover of the wiring box**

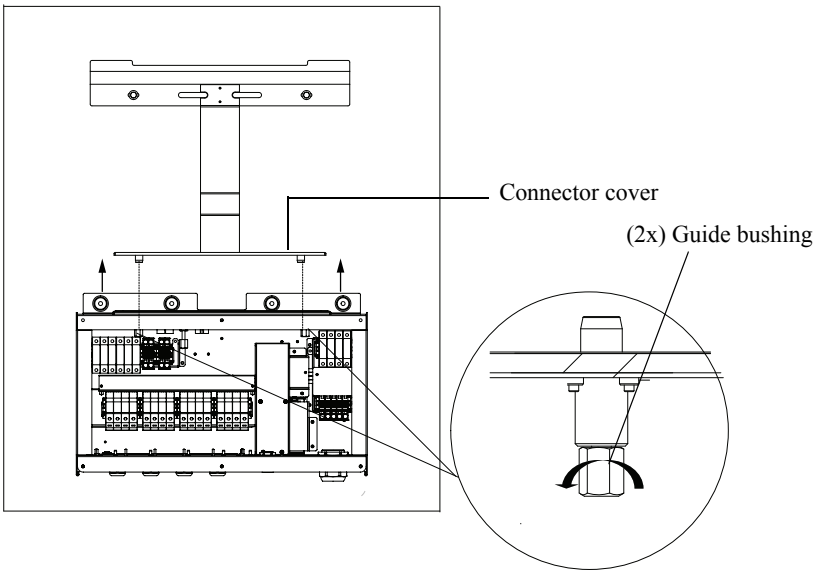


Figure 2-26 **Removing the connector cover**

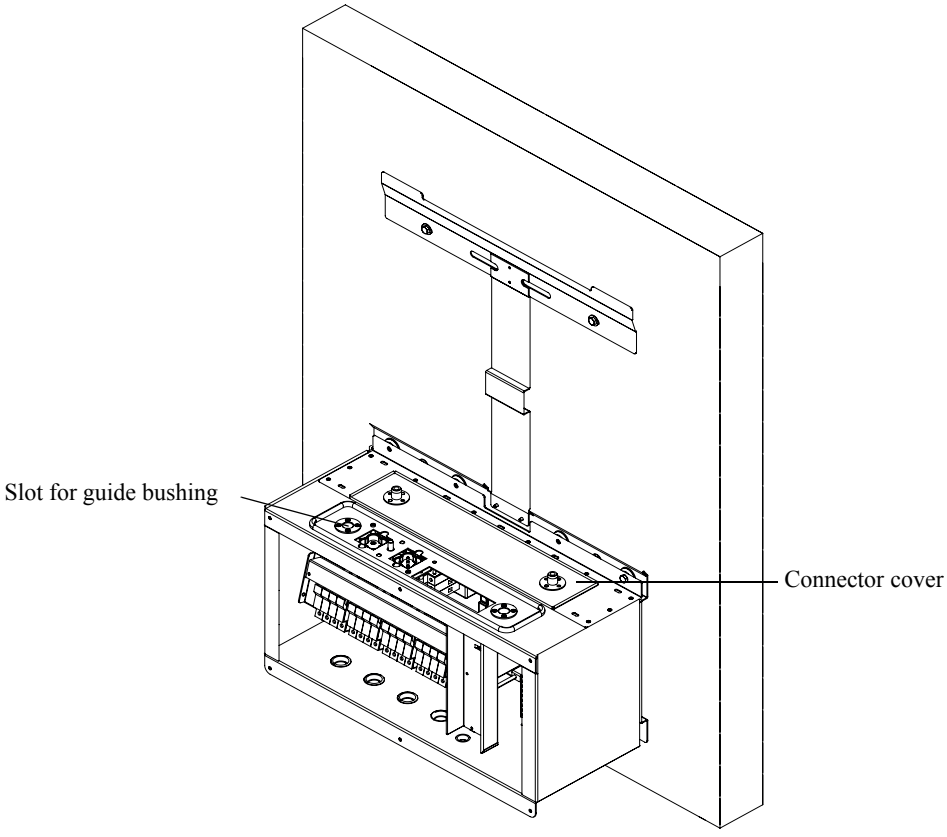


Figure 2-27 **Anchoring the connector cover**

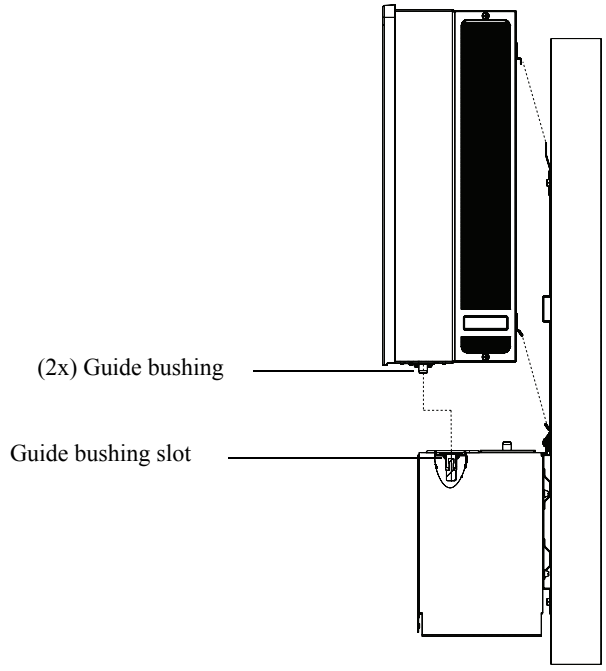


Figure 2-28 **Inverter assembly- side view**

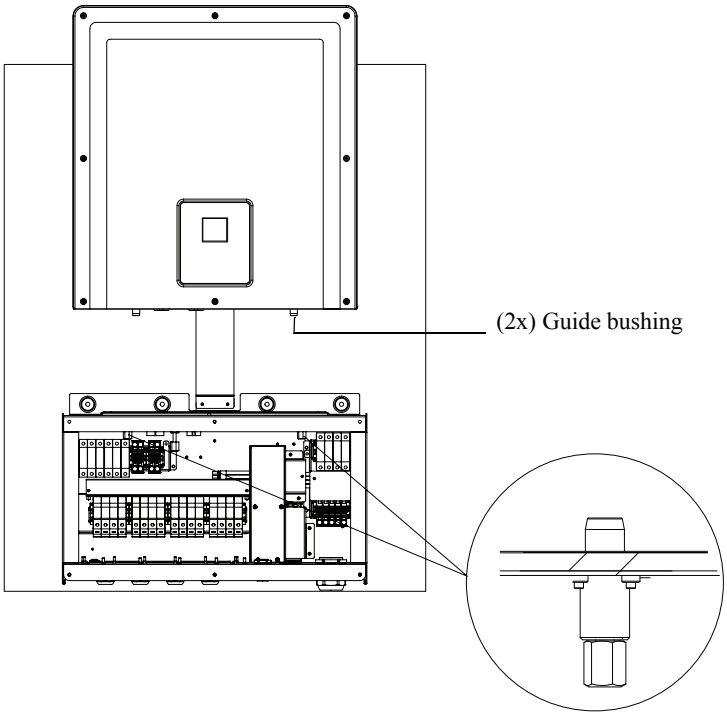


Figure 2-29 **Inverter assembly- front view**

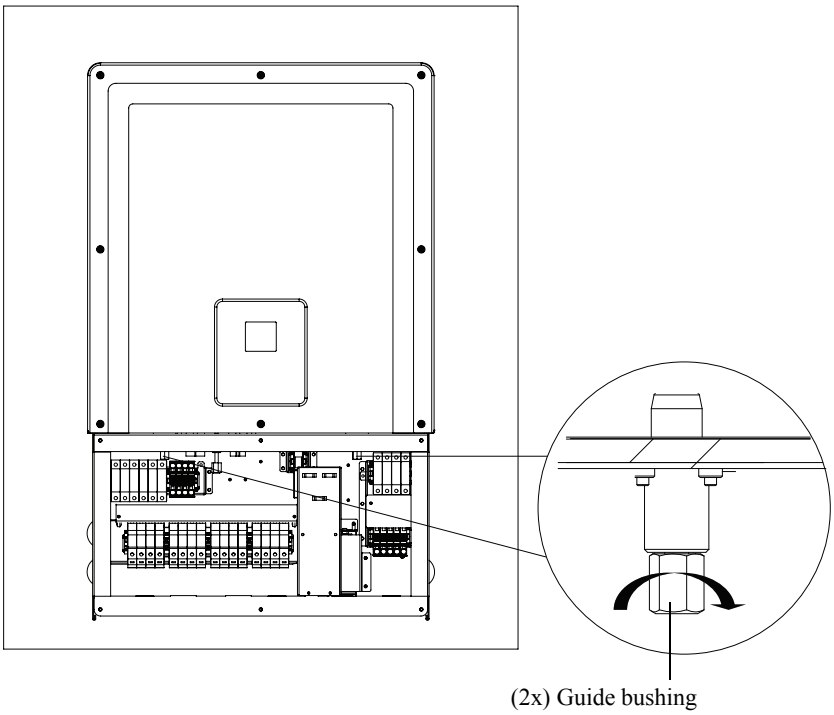


Figure 2-30 **Locking the inverter to the wiring box**

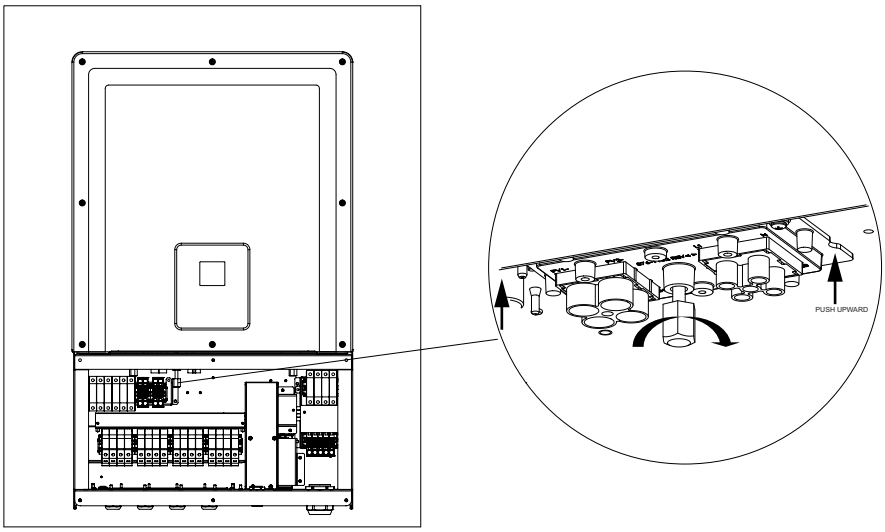


Figure 2-31 **Locking Inverter and Wiring box power connector**

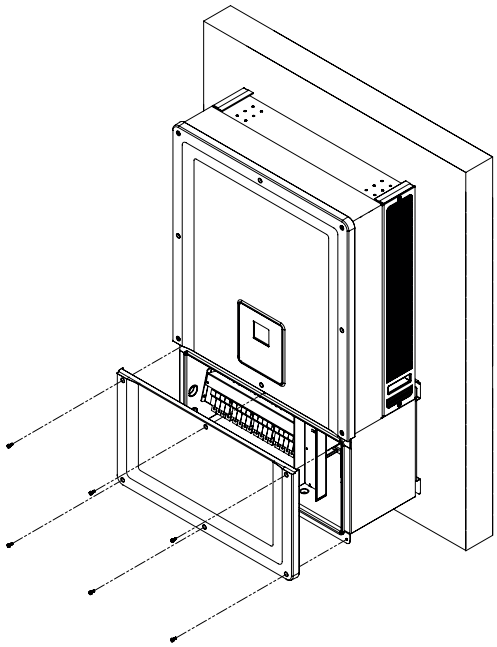


Figure 2-32 **Closing the wiring box**

Planning and Wiring

This section describes the PV Planning, DC Wiring to the inverter, and AC grid connection Planning and Wiring.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK AND FIRE

- All the electrical work must be done in accordance with the local electrical codes.
- Conext™ CL inverter has no user serviceable parts inside. To be installed and serviced only by qualified personnel equipped with appropriate PPE and following safe electrical work practices.
- Before installation, de-energize the AC and PV sources using external disconnecting means provided in the installation.
- Test using a meter rated at least 600 VAC and 1000 VDC to make sure all the circuits are de-energized. Follow a lock-out tag-out procedure.
- Connect the PV conductors, only after earthing the inverter through the AC connection and the earthing terminal.

Failure to follow these instructions will result in death or serious injury.

Recommended Protection Devices and Conductor Sizing

It is the responsibility of the installer to determine and provide the external over current protection and disconnecting means if required, in addition to the integrated features for the PV input wiring. Determine the need for over current protection, and its rating or setting, based on the:

- Applicable installation codes.
- Array currents involved.
- Current ratings (see Table A-1 on page A–2).
- Expected ambient temperatures.
- Any other system parameters required by the installation codes.

Planning

This section provides information about the PV planning.

PV Planning

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, FIRE AND EQUIPMENT DAMAGE

Use this inverter only with PV modules that have an IEC 61730 Class A rating.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

- Do not ground either the positive or negative conductor from the PV array.
- The maximum unbalanced power between 2x MPPT's is 60/40%. A single MPPT shall not exceed 12,900 W for Conext™ 20kW, and 15,900W for Conext™ 25kW under unbalanced condition.

Failure to follow these instructions can result in equipment damage.

⚠WARNING

HAZARD OF ELECTRIC SHOCK, FIRE, AND EQUIPMENT DAMAGE

- The PV array voltage must never exceed 1000 VOC (open circuit voltage) under any condition.
- The Absolute Maximum PV array I_{SC} (short circuit current) must not exceed the specified limit per MPPT under any conditions.

Failure to follow these instructions can result in death or serious injury, and equipment damage.

Conext™ CL must be used only with ungrounded/ floating connections, wherein the positive and negative terminals of PV array are not grounded. The inverter design is compatible with Mono- Crystalline or Poly- Crystalline panel.

Ensure that the following requirement is met for installation:

- All the components installed between the PV array and the inverter shall be rated for at least 1000 VDC and as per the applicable installation codes.

Table 2-9 PV input parameters

Parameter	Conext™ CL 20000E	Conext™ CL 25000E
Maximum input voltage, open circuit	1000 VDC	1000 VDC
Maximum input current per MPPT	31 A	31 A
Absolute maximum short circuit current per MPPT	40 A	40 A
MPPT full power range	350 - 800 V	430 - 800 V

NOTE: For more details, refer to the **System Specifications** on page A-2.

Any cable or wiring located outdoors must be outdoor rated, UV (sunlight) resistant with suitable voltage and flammability rating, and should comply with the local code requirements.

NOTICE

RISK OF EQUIPMENT DAMAGE

To ensure protection class IP65 (electronics)/ IP54 (rear portion), and to protect against penetrating moisture and dirt, close the unused inputs and outputs with the hole plugs provided.

Failure to follow these instructions can result in equipment damage.

PV Wiring Diagrams

The inverter can accept PV input on all the four PV array input terminals on each MPPT. A maximum of four PV string inputs can be connected to each MPPT.

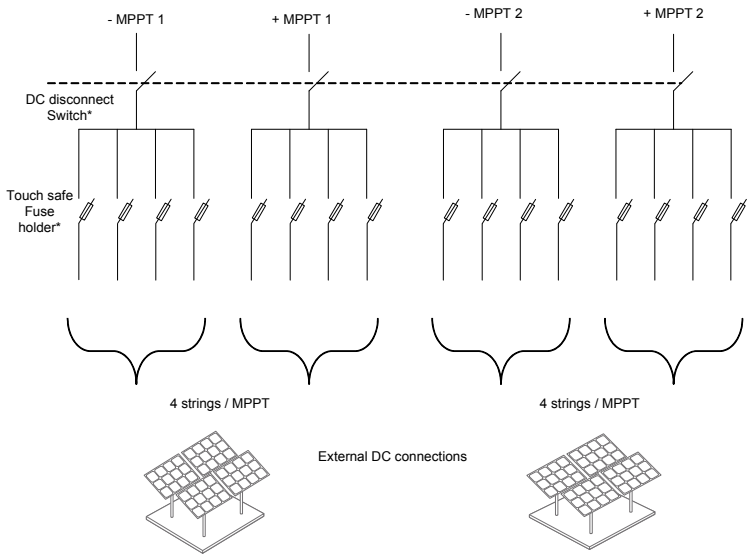


Figure 2-33 **PV Wiring diagram of Conext™ CL 20000E and 25000E models**

*Not applicable for the base model

Independent or Parallel Configuration of Two Inputs

Conext™ CL inverters have dual PV input circuits, each with independent Maximum Power Point Tracking (MPPT) control. The inverter has the flexibility to configure for dual/ single MPPT operation mode. When operated in the dual input mode, the inverter can optimize the operating point of the two independent arrays. Each of the inputs are dedicated to a separate array with an independent MPPT control. This means that the two arrays can be installed with different orientations.

Dual MPPT Configuration

This configuration is most suitable for PV installations with multi roof orientations and asymmetrical string sizes. The dual MPPT design permits two separate PV input circuits for each MPPT trackers.

Single MPPT Configuration

This configuration is most suitable for PV installation with homogeneous panel orientation and symmetrical string sizes. The single MPPT configuration permits only one PV input circuit. Both the MPPT trackers are wired and operate in parallel.The MPPT parallel option is applicable for all the models. For more information on selecting the MPPT, refer Figure 3-3 on page 3–7.

To operate the inverter in single MPPT mode,

1. Connect the MPPT shorting terminal block by means of a solid copper jumper, (provided with the wiring box accessory kit), to parallel the MPPT trackers.
2. Install the jumpers between the two channels (positive and negative) and ensure for proper slide in connection to avoid arcing.

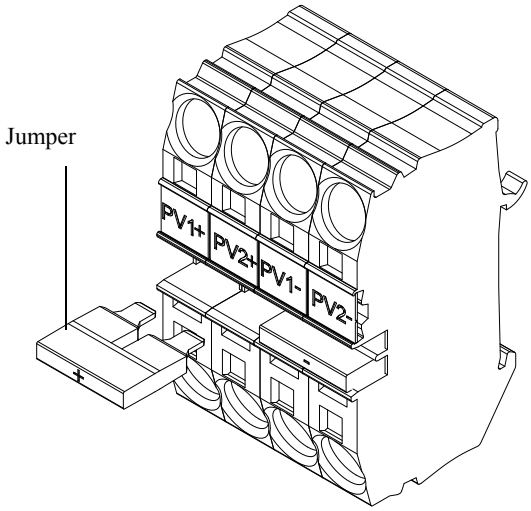


Figure 2-34 **MPPT Shorting Connector and Jumper arrangement**

PV1(-) and PV2(-): Connect these two terminal blocks with a jumper to parallel the NEGATIVE MPPTs.

PV1(+) and PV2(+): Connect these two terminal blocks with a jumper to parallel the POSITIVE MPPTs.

You can change the MPPT configuration anytime later after the First time power up using the Install Settings menu.

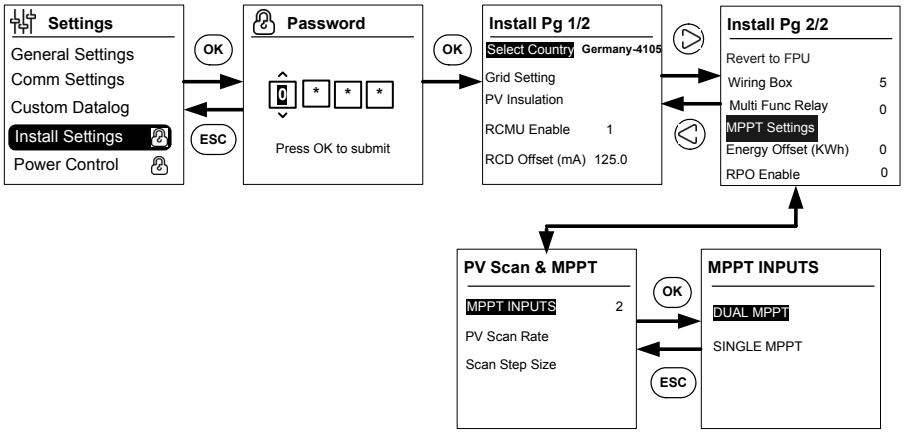


Figure 2-35 **MPPT settings through Install settings menu**

DC Wiring (From PV Array)

DC Wiring Polarity

Conext™ CL inverter has in-built reverse polarity protection of PV, provided by a diode. The inverter will display error message for any reverse polarity wiring at the DC input. When the array is shorted, there will be no DC voltage on the MPPT input and the PV generator will be in short circuit condition.

NOTICE
RISK OF EQUIPMENT DAMAGE • Ensure that correct polarity is used at all the power connections. • Do not ground either the (+) or the (-) conductor of the PV array. • Avoid reverse polarity. If one of the string polarity is reversed in parallel with other strings, it will cause 2000 VDC across the inverter input. • Ensure proper wiring termination and avoid poor connection. **Failure to follow these instructions can result in equipment damage.**

DC wiring

Before connecting the wires to the wiring box, ensure that the DC disconnect switch is in the OFF position.

The provision for cable glands are provided at the bottom of the wiring box. The cable entries and the DC disconnect switch are as shown in Figure 1-6 on page 1–7.

The cable and associated accessories selection should be appropriate to ensure the IP-65 environmental protection.

Cable requirements

- Cable type: solid or stranded, copper wire
- Cross section: 4 mm^2 to 20 mm^2
- The DC cables must be approved for temperatures over +90º C (194º F)
- The maximum cable length subject to conductor cross-section must be observed
- The DC cables must be sized in accordance with the installation requirements.

AC Grid Connection Planning

This section describes the requirements regarding the AC output wiring.

The AC cable must be jacketed and has five insulated copper conductors to allow connection to L1, L2, L3, N, and PE (protective earth). Any cable or wiring located outdoors must be outdoor rated and UV (sunlight) resistant.

The AC terminal block provided can accommodate AC cable sizes from 0.5 mm^2 to 20 mm^2. The recommended AC cable diameter is 6 mm^2 to 16 mm^2. The length of the cable should be selected to limit the voltage drop to <1%.

It is recommended to use twisted wire cables to reduce the grid line inductance and for improved performance. If single core cables are used in the open duct, keep the distance between the cores as minimum as possible.

NOTICE
RISK OF EQUIPMENT DAMAGE • Ensure that L1, L2, L3, line connections are done correctly, not swapped with neutral connections. • Conext™ CL inverter supports TN-S, TN-C, TN-C-S and TT connection types (earthing systems). It does not support IT connections. **Failure to follow these instructions can result in equipment damage.**

AC Wiring

This section describes how to connect the inverter to the AC grid. All the electrical installations must be carried out in accordance with the applicable local standards.
The installer should ensure that the DC input and AC output circuits are isolated from the enclosure and the system grounding.The connection requirements of the grid operator must also be met.
The line voltage must be within the permissible range. (Refer to the **System Specifications** on page A-2.)

An AC breaker may be used to protect the grid side of the inverter. It is the responsibility of the installer to choose the appropriate type of AC breaker. Schneider- Electric recommends to use a three phase, four pole MCCB breaker rated at a minimum of 50 A, 415 V at the output.

It is recommended to use an AC disconnect switch external to the inverter for isolating the AC lines from the Inverter Wiring Box.

Cable requirements

- Cable type: solid or stranded, copper wire.
- Cross section: 6 mm^2 to 25 mm^2.
- The AC cables must be approved for temperatures over +90º C (194º F).
- The maximum cable length subject to conductor cross-section must be observed.
- The AC cables must be sized in accordance with the installation requirements.

Installing the Wire

Stripped solid conductors or stranded conductors with ferrules are easily connected by simply pushing the conductor into the wire entry. For conductors rated 20 mm^2 stranded conductors can also be easily inserted without using any tools.

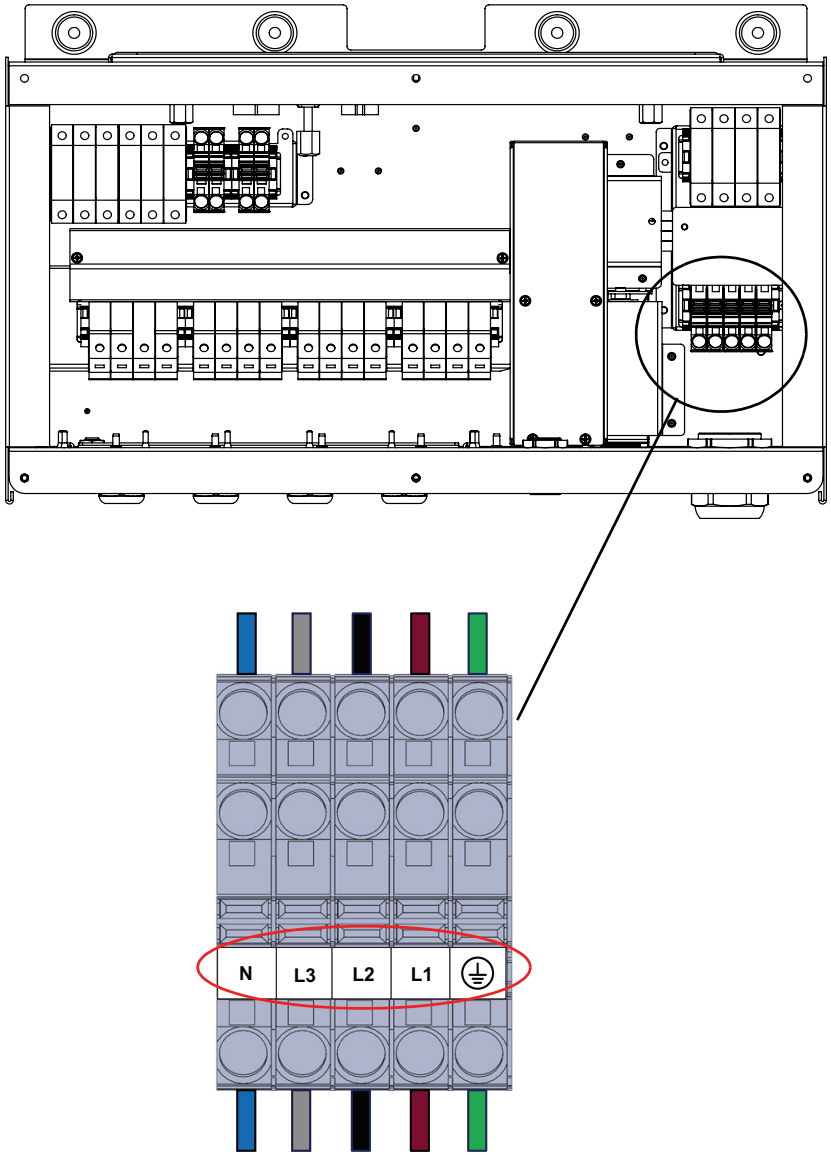


Figure 2-36 **Wire installation**

For wires of smaller cross-section, use a a small flat screwdriver 6.35 mm wide (1/4”) to connect stranded conductors without ferrules. Refer to the figure below.

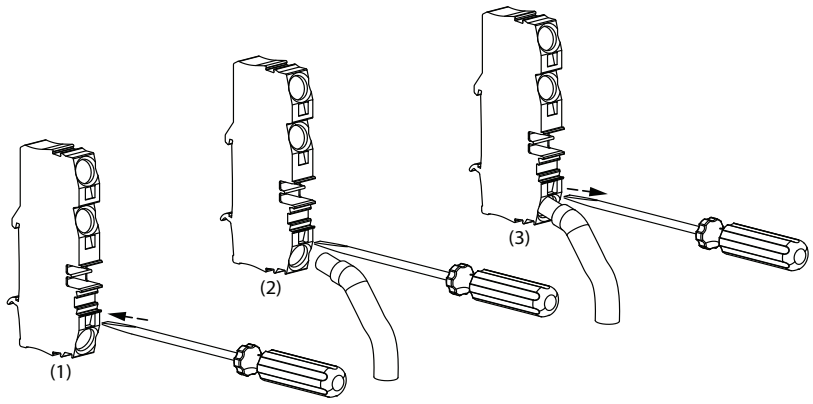


Figure 2-37 **Wire installation**

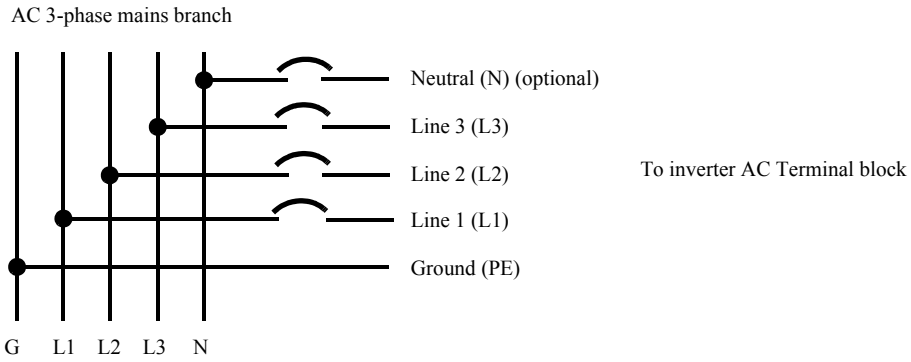


Figure 2-38 **AC connection** details

Table 2-10 Color-coding to identify the phase sequence (phase rotation)

Component of AC wiring	Color
Line 1 (phase 1)	Brown
Line 2 (phase 2)	Black
Line 3 (phase 3)	Gray
Neutral	Blue
Protective earth	Green

NOTICE

RISK OF EQUIPMENT DAMAGE

The inverter supports positive and negative phase sequences. The sequence of L1 ~ L3 can be reversed; however, N and PE must be connected to the correct pins regardless of the phase sequence.

Failure to follow these instructions can result in equipment damage.

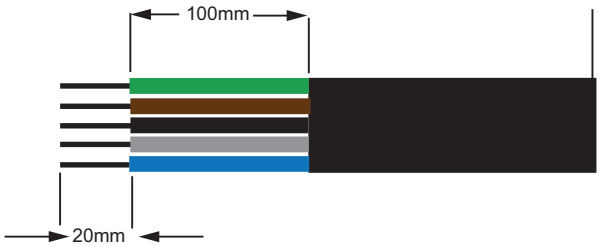


Figure 2-39 **AC wiring**

- Trim all the wires to 100 mm (3.94 in).
- Using an appropriate tool, strip 20 mm (0.79 in) of insulation from all wire ends.
- Insert the stripped end of each of the five wires into the appropriate hole in the terminal block.

Maximum AC Cable Length

The following table provides recommended maximum cable lengths for 10 mm^2, 16 mm^2 and 20 mm^2 conductor size from inverter to AC distribution box.

Table 2-11 AC cable loss details- copper

KVA	Percentage losses (Copper cable)		
20 KVA			
AC cable length	10 mm^2	16 mm^2	20 mm^2
25 m	0.4%	0.22%	0.14%
50 m	0.7%	0.45%	0.28%
75 m	1.1	0.67%	0.42%
100 m	1.4	0.90%	0.56%
25 KVA			
25 m	0.7%	0.42%	0.27%
50 m	1.3%	0.85%	0.53%
75 m	2.0%	1.27%	0.80%
100 m	2.7%	1.69%	1.06%

If the AC cable length exceeds 10 m (32.8ft), the use of an AC distribution box closer to the inverter is recommended.

Note: The values mentioned above are only for general reference.

⚠WARNING

HAZARD OF ELECTRIC SHOCK AND EXPLOSION

- Always be cautious of nicked wire insulation.
- Always use the specified strip length cable length when stripping the AC and DC cables.

Failure to follow these instructions can result in death or serious injury.

Earthing Terminal

The use of an earthing terminal depends on the local installation codes. It is recommended to use this terminal for effective earthing means. It can be used to connect the PV metalwork to earth, or to provide a second protective ground connection for the inverter chassis as required by some countries. It is the responsibility of the installer to determine proper use of this terminal.

- To comply the safety standard, it is recommended to:
  - use earthing conductor size with permanently connected wiring of at least 6 mm^2 if copper, or 10 mm^2 if aluminum.

  Or

  - connect the additional grounding to the earthing terminal, with the same cross sectional area as of the original protective earthing conductor as shown in Figure 2-40 on page 2–43.
  - use M6 lug for crimping.
- If there are no specific installation codes mentioned, use at least a minimum of 10 mm^2 copper earthing conductor.
- The selected cable should be rated for 90° C (194° F) minimum.

⚠WARNING

HAZARD OF ELECTRIC SHOCK

If the PV metal work grounding is done at the inverter, removal of inverter from the wiring box or disconnection of AC from the inverter will leave the PV metal work ungrounded; in these cases provide suitable temporary additional grounding.

Failure to follow these instructions can result in death or serious injury.

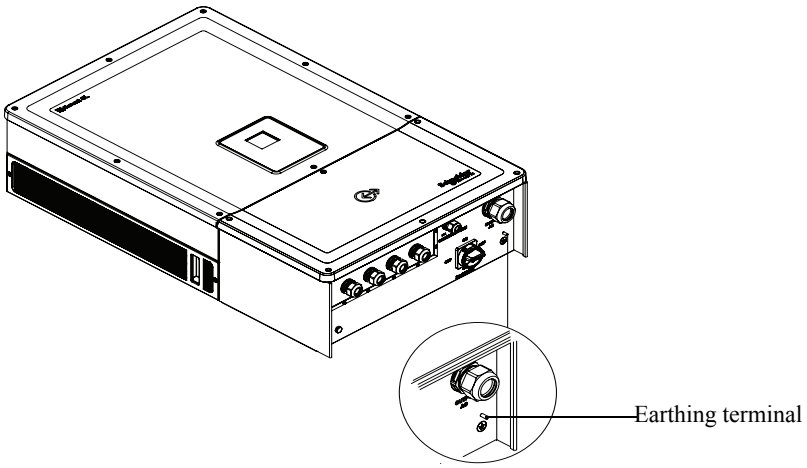


Figure 2-40 **Connecting the earthing conductor**

Communication Interface

The communication interface wires are of Safety Extra Low Voltage (SELV) type circuits.

⚠WARNING

HAZARD OF ELECTRIC SHOCK

- Connect only to Safety Extra Low Voltage (SELV) circuits.
- The circuits provided for external communications and control equipment are designed to provide isolation from the neighbouring hazardous circuits within the inverter. The communications and control circuits are classified as Safety Extra Low Voltage (SELV) and must only be connected to other SELV circuits of the types described in this manual.
- Maintain physical and electrical separation of the communications and control circuits from non-Safety Extra Low Voltage (SELV) electrical circuits, both within and outside the inverter.

Failure to follow these instructions can result in death or serious injury.

Conext™ CL supports multiple communication interfaces such as Modbus, Ethernet and USB Host services. In addition, the inverter supports RPO (Remote Power Off) and Dry contact relay.

The below diagram shows the front view of the communication interface.

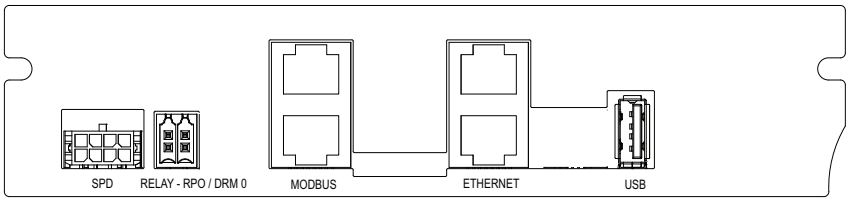


Figure 2-41 **Communication interface**

Note: DRM 0 is applicable only for the Australia country settings.

Connecting Cables to the Communication Module

To access the communication ports, remove the communication cable glands. Refer to the Figure 1-3 on page 1–5 for the location of the communication cable gland.

The connections for the Modbus, Ethernet, RPO and Dry Contact Relay are done through an appropriate cable gland. The conductor protection should be in-line with the applicable wiring codes.

The RPO and dry contact relay cables can be connected to the communication card using the mating connectors provided along with the wiring box lit kit. Refer to the Table 2-1 on page 2–3.

SPD monitoring cable connection

The SPD monitoring cable connection can be connected to communication card as shown in Figure 2-44 on page 2–46.

1. Check for the SPD monitoring cable at the cable tray end.

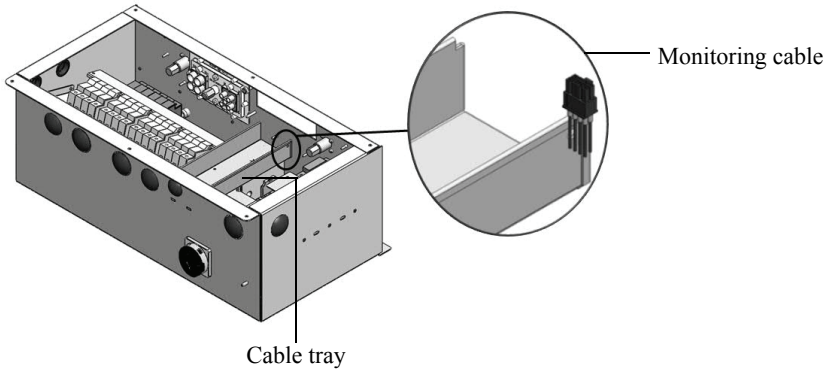


Figure 2-42 **SPD monitoring cable**

2. Cut the cable tie to separate the monitoring cable.
3. Remove the ESD cover over the connector.

4. Connect the SPD monitoring cable to the Comm card.

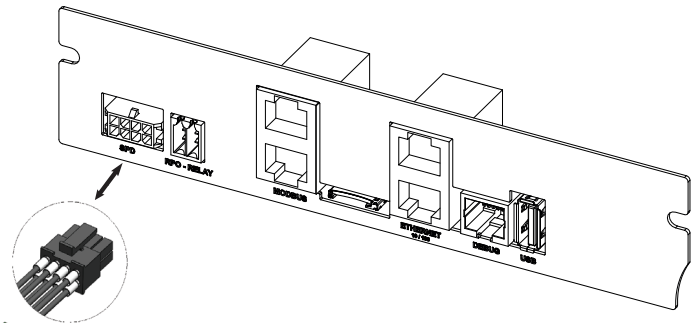


Figure 2-43 **SPD monitoring cable connection**

Note:

- The monitoring cable connection to Comm card remains the same for PVSCL2025E300 and PVSCL2025E301.
- The SPD connector will not be present in PVSCL2025E100, PVSCL2025E200and PVSCL2025E201.

Modbus RS485 Connection

The pin definitions of the Modbus (RJ-45) connection are shown in Table 2-12. Figure 2-44 on page 2–46 shows the RJ-45 connectors.

Use external Modbus surge protection devices to avoid any damages to Modbus communication circuits when communication cables are exposed outside.
Also refer to the application notes (“Modbus/RS485 Wiring for Conext™ Core XC Series Inverters” or "Conext™ SmartBox-BA – Application note on field wiring and surge protection for communication ports") of Conext family devices to choose the external surge protection devices.

NOTICE

RISK OF EQUIPMENT DAMAGE

Make sure, the other end of the Modbus (RS485) connection is also Modbus (RS485). Connection to any other type of communication port, such as Ethernet, may result in an equipment damage.

Failure to follow these instructions can result in equipment damage.

Note:

- Using incorrect pin out for RS-485 cable and interchanging the GND pins, results in discontinuity on the network and poor communication.
- It is recommended to use the shielded Cat5 cable 0.20 mm^2.

Table 2-12 RJ-45 pin details

Pin	Function
4	DATA+
5	DATA-
7	NC (Not connected)
8	Modbus ground

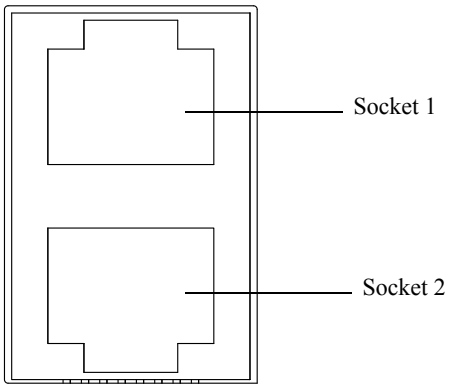


Figure 2-44 **Modbus (RS485) connectors**

The serial settings for the RS485 connection is shown in Table 2-13.

Table 2-13 Serial settings for the RS485 connection

Parameter	**Value**
Baud rate	9600 (default), 19200, 38400, 57600,115200
Data bits	8
Stop bits	1 (default)
Parity	None (default), Odd, Even

Ethernet Connection

Conext™ CL supports Ethernet communication in star network configurations. By default, the DHCP setting is enabled. For network communication, enable the DHCP setting.

Home> Settings> Comm Settings> Network Settings

Note: If DHCP is enabled the Inverter acquires the IP address automatically when connected to any router/switch.The DHCP can be enabled or disabled through front display as shown in Figure 2-45 on page 2–47.

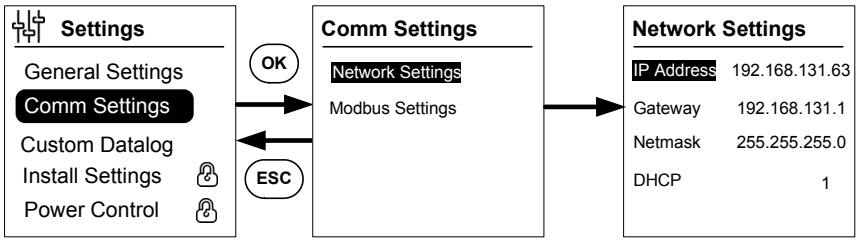


Figure 2-45 **Checking the IP address**

Ensure to connect the Ethernet cable only to socket1 as in Figure 2-46 on page 2–47.

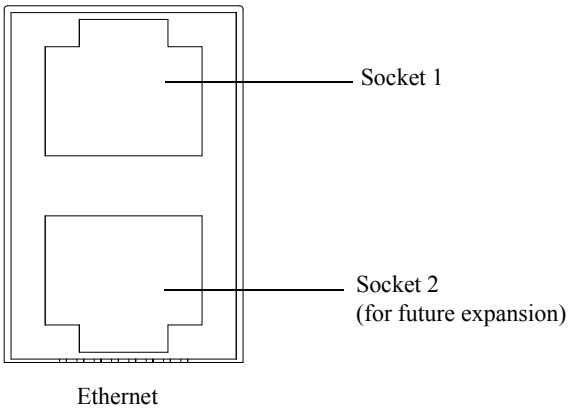


Figure 2-46 **Ethernet Connection**

The conext CL inverter also supports direct communication between Inverter and Laptop/ PC.To use this feature make the DHCP setting to DISABLE and connect the inverter directly to either PC/laptop using CAT5/CAT6 Cable. In PC/laptop side configure the settings as shown in Figure 2-47 on page 2–48.

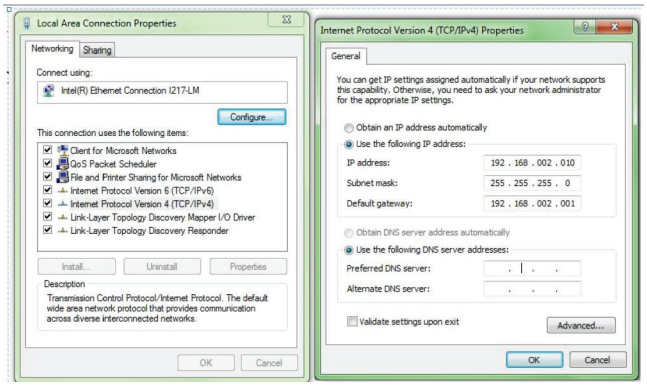


Figure 2-47 **Ethernet Connection**

Daisy Chain Configuration

In a single unit configuration, only one RJ45 connection is used and the end terminator plug (Modbus Terminator) provided with the wiring box packaging is connected into the other RJ45 connector as shown in Figure 2-48.

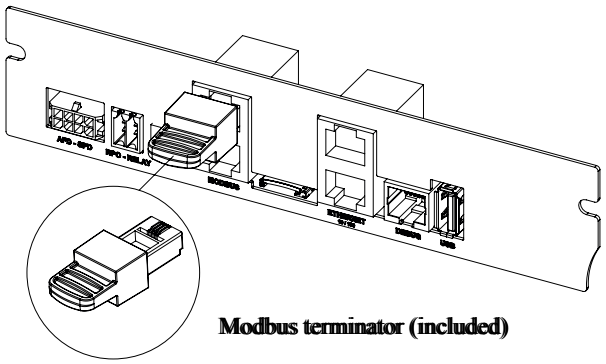


Figure 2-48 **Daisy chain configuration**

Conext™ CL inverters can be connected in Daisy chain configuration. In this case both RJ45 connections are used except either on the first or the last units in the network. The end terminator plug for the first or last unit should be connected on the RJ45 connector as shown in Figure 2-48. A maximum of 32 inverters can be daisy chained.

Note: Ensure to use a Modbus Terminator in one of the inverters connected in the network, for proper communication.

For multiple inverter connection, refer to the Figure 2-49.

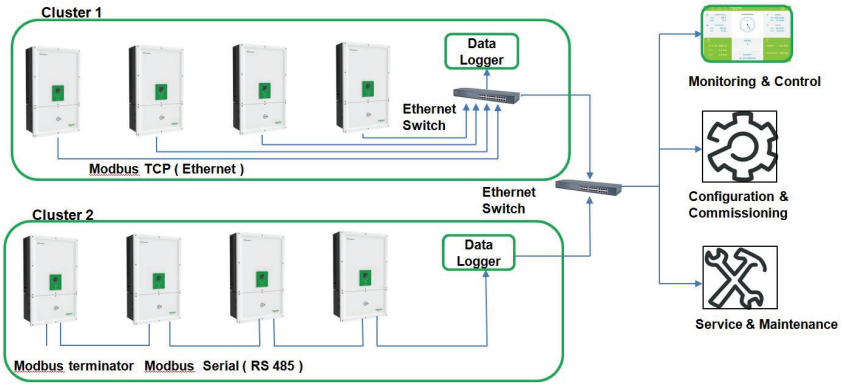


Figure 2-49 **Cluster 1: Modbus TCP and Cluster 2: Modbus RS485 connections**

RPO and Dry contact relay connection

⚠WARNING

HAZARD OF SHOCK AND RISK OF EQUIPMENT DAMAGE

- Do not connect circuits exceeding 28 VDC and 3 A to the dry contact output. The use of a 3 A/32 VDC certified fuse is recommended.
- Do not interchange the RPO and Dry Contact.
- Enabling the RPO will not isolate the inverter from PV and grid sources. It is required to de-energize all the connected sources manually.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

One set of dry contact relay and RPO connectors are provided along with the wiring box packaging.

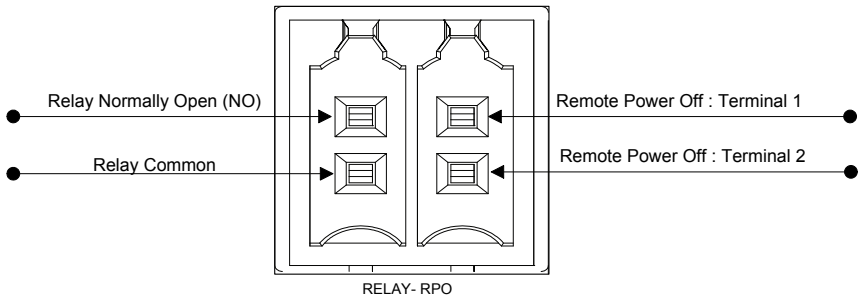


Figure 2-50 **RPO and Relay Contact terminal** details

Multifunction Dry Contact Relay

The Conext CL inverter supports Multi function Dry Contact Relay modes. By Default the Dry contact relay mode has been set to Basic (Mode-0).

When the inverter is operating under normal conditions, the dry contact is open.The display can be used to configure the relay to operate in multi function mode under different events as mentioned. The configurable events modes are:

Home> Settings> Install Settings> Page 2/2

Modes:

- 0: Basic Mode - No relay Operation.
- 1: Relay enabled on any one of user set inverter event (Max of three event code).
- 2: Relay enabled based on inverter status (Online/offline).
- 3: Relay enabled on inverter temperature set limit.
- 4: Relay enabled based on inverter power level set limit.
- 5: Relay Enabled on any inverter events (Faults/Errors/Warnings).

Refer to the Figure 2-51 for typical connection. A maximum of 28 VDC supply can be connected in series with the relay terminals. It is also recommended to use a wire size of 0.82 mm^2 for relay wiring, and a suitable external fuse (<3 A) for additional protection.

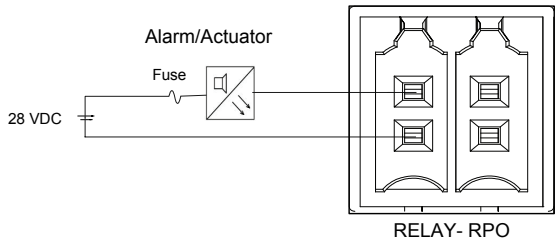


Figure 2-51 **Dry Contact Relay connection**

Remote Power Off

The remote power off terminals (potential free contact) can be used to turn off the inverter from a far distance with in the site. By default, the RPO option is disabled. This feature is operational, only when the inverter is online and the RPO enable option is configured. The RPO terminals should be connected to a switch which has a normally closed (NC) contact. The inverter can be turned off by opening the contact. The maximum permissible distance for RPO switch from the inverter location should be limited to 30 m. The recommended wire size for RPO switch wiring is 0.33 mm^2, 2 wires.

- The inverter will not turn ON if the RPO terminals are not wired properly (Normally Closed (NC) configuration) and the RPO enable option is configured from the LCD Settings menu.

  Home> Settings> Install Settings.
- Ensure that there is no break in the RPO terminals.

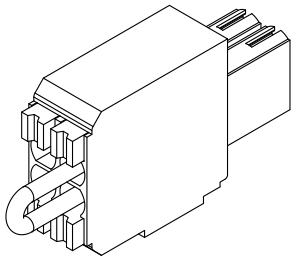


Figure 2-52 **RPO connection with shorting link**

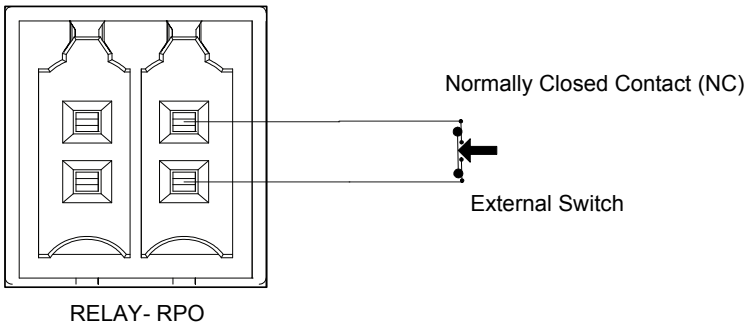


Figure 2-53 **RPO connection for single inverter**

The connection diagram for RPO with multiple inverters is as shown below.

Note: The RPO is disabled by default (**Home> Settings> Install Settings> RPO Enable**).

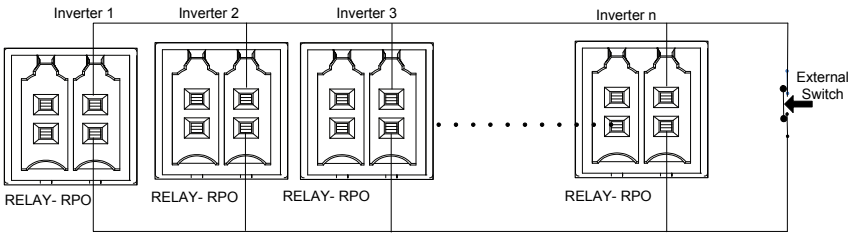


Figure 2-54 **RPO connection with multiple inverters**

PV String Protection

NOTICE

RISK OF EQUIPMENT DAMAGE

It is required to use only PV class fuses for protecting PV array from short circuit current. The selection of appropriate fuse rating with proper certification (like VDE, TUV) is very important for any given PV installation.

Do not use fuse holder to disconnect the PV input to inverter during operation.

Failure to follow these instructions can result in equipment damage.

For calculating the PV fuse rating for a specific PV array installation, refer the PV panel manufacturer documentation in addition to local electrical installation code.

Recommended Fuse: Part number: PV-15A10F
Make: Cooper Bussman
Rating:1000 VDC, 15 A.

Schneider order code:

Fuse: OJ-512-0073-Z
Link: OJ-512-1028-Z

If less than 2x strings are used per MPPT, fusing may not be needed.

Note: Not applicable for Base model.

Surge Protection Device Monitoring

Over voltage surge arrestors are provided on the DC and AC side for protecting the inverter from high voltage surges due to any abnormal conditions.
Figure 2-55 shows the connection details for both AC and DC SPD's. Conext™ CL has SPD monitoring feature, that indicates the End of Life and need for the SPD module replacement.

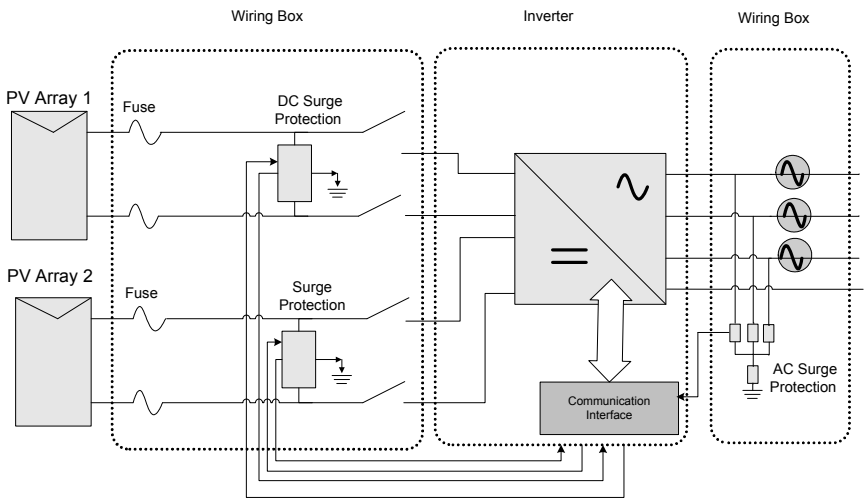


Figure 2-55 **Surge Protection device wiring**

Note: SPD is an optional feature. For more details, refer to the **Wiring Box Configurations** on page 2-13.

Web Interface

Conext™ CL inverter has an integrated built in web server. The user can access the inverter data using an Ethernet network connection. The following steps explain how to access the webpage of inverter.

1. Connect one end of the **Ethernet Cable** to the **RJ45 Ethernet** port (socket1)on the inverter.
2. Connect the other end of the **Ethernet cable** to the network router or laptop/PC.
3. Check the **IP address** on the LCD display.
4. Note down the IP address of the inverter by navigating through the LCD display.

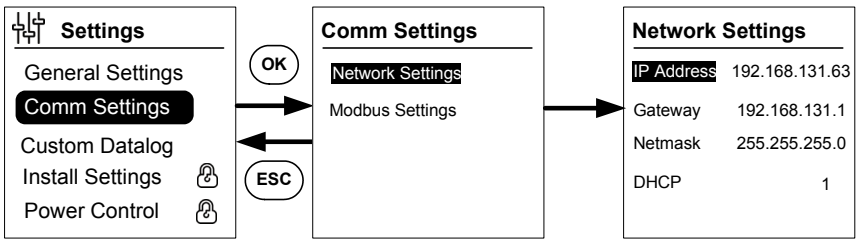


Figure 2-56 **Checking the IP address**

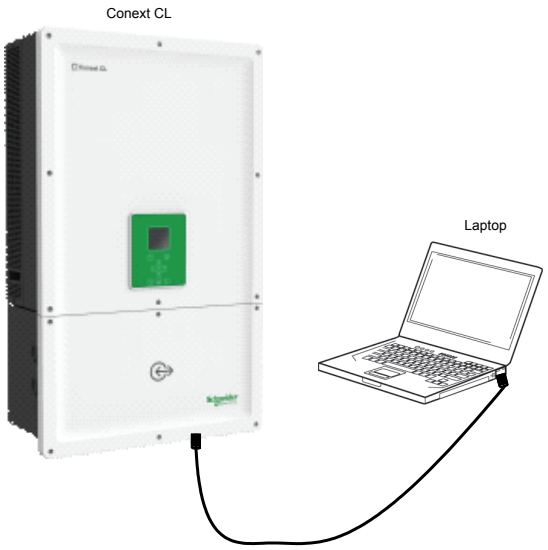


Figure 2-57 **Web Interface connection** diagram

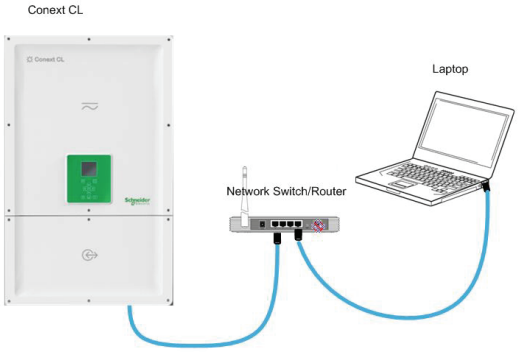


Figure 2-58 **Web Interface connection** via router diagram

5. Open a web browser on your laptop or tablet and type the IP address displayed on the LCD display. The web browser now loads and displays **Conext CL Login Web Page.**
6. In the **Login** page, select the preferred language.
7. Login using the **user name and password**.
   - The default user name is **owner.**
   - The default password is **conextcl.**

On successful login, Conext™ CL dashboard is displayed as shown below.

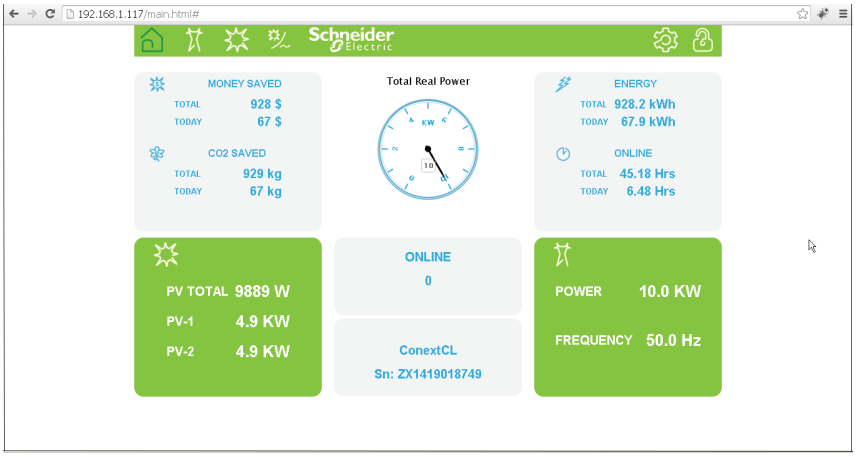


Figure 2-59 **Web interface dashboard** screen

Note: When inverter is directly connected to Laptop/PC and DHCP Enabled it takes good amount of time to acquire the IP Address based on the Laptop/PC network settings.To have faster access it is advised to disable the DHCP before connecting to Laptop/PC and configure the network settings as shown in the figure.

Internal Data Logger

Conext™ CL has a built-in integrated data logger. The logging frequency and parameters can be configured using the webpage interfaces only (webpage home> Conext CL Status tab> Logging>Data logging). The Minimum data-logging frequency is 300 seconds**.**

Table 2-14 Internal Data Logger specifications

Recording Cycle	Storage Time
1 record/5 minute	1 day
1 record/15 minutes	1 month
1 record/1 day	1 year
1 record/1 month	10 years

Note: The Data log and all the logs are disabled by default except energy logs which are cleared periodically at every 3 months due to storage limitation.

3 Operation

Chapter 3, “Operation” contains information on the basic operation of the inverter and the wiring box.

It contains information about

- Commissioning
- LCD and Control Panel
- Navigating the LCD Menus and Screens
- Active/Reactive Power and LVRT Menu
- Active Power Control
- Active/Reactive Power and LVRT Menu
- Low Voltage Ride Through

Commissioning

Start up procedure:

1. Ensure that the DC and AC breaker are turned OFF.
2. Complete the wiring as described in chapter 2.
   - AC wiring
   - DC wiring
   - Earthing
   - Communication Interface
3. Check the polarity of the DC wires and ensure that the maximum DC voltage is not more than 1000 V.
4. Ensure to place the string protection fuses*. (Refer to the **PV String Protection** on page 2-49.).
5. Ensure proper insertion of communication interface cables to the appropriate connectors.
6. Ensure the dry contact and RPO connections are wired properly (if RPO is enabled).
7. Ensure all the cable glands are sealed properly after completing the terminations.
8. Turn ON the AC or DC breaker (external) and ensure that the grid is connected to the inverter. The inverter will boot up and stays in **First time power up** state and requires user inputs to configure. Follow step 15.
9. Check **http://solar.schneider-electric.com/product/conext-cl/** for the latest firmware version. If the version on the inverter and website matches, follow step 15.
10. Remove the wiring box cover.
11. Connect the USB drive with the latest firmware version to the USB device socket and then in LCD press OK to upgrade the inverter firmware.
12. The inverter now starts upgrading the new firmware available in the USB drive.
13. The inverter will boot up and complete the Power on Self test. If the LCD displays any event message, refer to the **Troubleshooting** on page 4-1.
14. Follow the procedures mentioned in the **Firmware Upgrade process** on page 5-11.
15. On successful completion of the Power on Self test, follow the first time power up settings as described in **First Time Power Up** on page 3-6.
16. After first time power up, turn ON the DC disconnect switch. For the switch location, refer to the Figure 1-3.

If there is sufficient sunlight, the inverter will start producing power.

17. Check the status of the indicator light (LED; refer to the Table 3-1 on page 3–4). The PV status LED should be green.
18. If the PV status LED is not green, check whether:
    - All the connections are correct.
    - All the external disconnect switches are closed.
    - The DC disconnect switch* on the inverter is in the **ON** position.

*The DC disconnect switch and string protection fuse are not part of the Base model.

For more details on Configuration settings, refer to the **Descriptions of LCD Information**.

LCD and Control Panel

The inverter has an LCD control panel, as shown in Figure 3-1. The location is shown in Figure 1-4 on page 1-6.

- To navigate across the LCD menus, use the five navigation buttons shown below in Figure 3-1 on page 3-3.
- To view the **Main** menu, press the **Home** button.
- To escape from any of the sub menus to the main menu, press the **ESC** button.

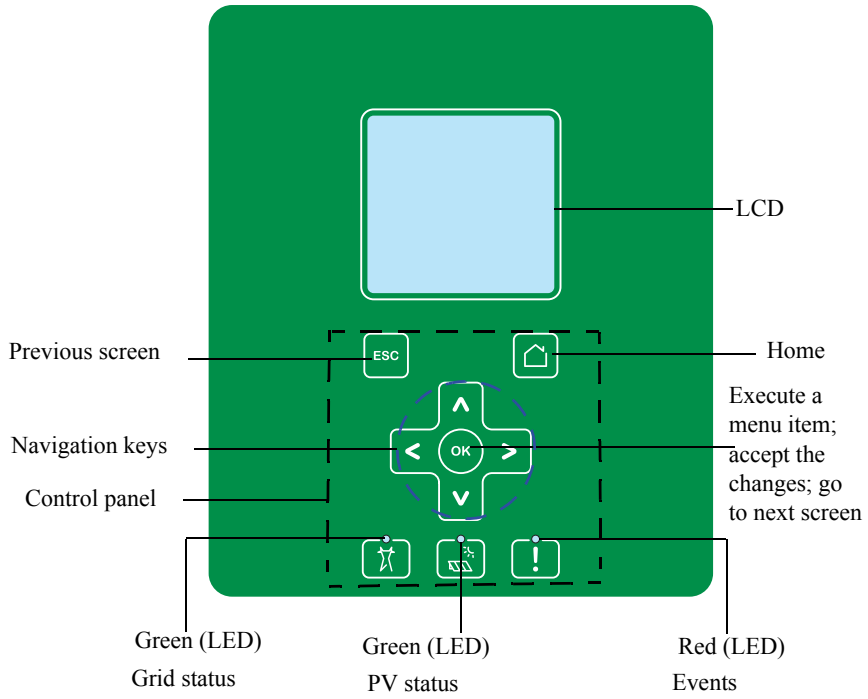


Figure 3-1 **LCD Control Panel**

LED Indicators

Table 3-1 LED Indicators

LED	Description
Event (red)	ON: an active service condition OFF: no service condition Blink: • Slow Blink: Warning • Fast Blink: RPO is open Note: • Slow Blink: one per second • Fast Blink: five per second
PV On (green)	ON: input PV voltage available OFF: input PV voltage not available Fast Blink: Unit is de-rating due to PV side conditions.
AC On (green)	ON: the unit is connected to the grid and power is available. OFF: the unit is not connected to the grid or grid power is not present. Blink: • Slow Blink: Unit is trying to reconnect to grid. • Fast Blink: Unit is de-rating due to AC side conditions.

Table 3-2 Buttons below the LCD

Button	Result
	Go to the home screen
ESC	Go to the previous screen
^	Go to the previous item in a main menu or to the previous screen (in a series of screens)
v	Go to the next item in a main menu or to the next screen (in a series of screens)
<	Go to the previous submenu item/ screen in the main menu
>	Go to the next submenu item/ screen in the main menu
OK	Execute the selected menu item, accept the changes, or go to the next screen (in a series of screens).

Navigating the LCD Menus and Screens

First Time Power Up

When power is turned ON first time (AC and DC) the LCD screen in the inverter shows the Schneider Electric logo and a progress bar indicating the power up progress.

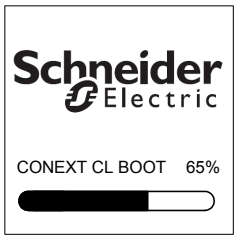


Figure 3-2 **Progress bar**

1. To operate the inverter for the first time, setup the following quick configuration settings:
   - Language
   - Country selection
   - Time zone and time setting
   - Date/ time
   - Wiring box selection
   - MPPT selection
   - Modbus selection
2. To set the Country and Wiring box selection, enter the access password. Password: **1234**.
3. The system reboots after the settings are completed. On subsequent startups the inverter will follow the **Normal Power Up** sequence.

Note:

- Without completing the Country and Wiring box selection, the first time power up will not progress further.
- In case of any wrong settings or selection, the user can restore the factory default settings from the Settings- Install Settings menu. By loading the factory default settings, the inverter restores the default values. Then repeat the first time power up procedure.
- Based on the selected country grid code requirement, inverter will monitor grid voltage and frequency values for certain duration of time before reconnection. This monitoring time will be indicated as VERIFY on the left side of DUI screen.
- Arc Fault Detection feature is not available in PVSC20/25E

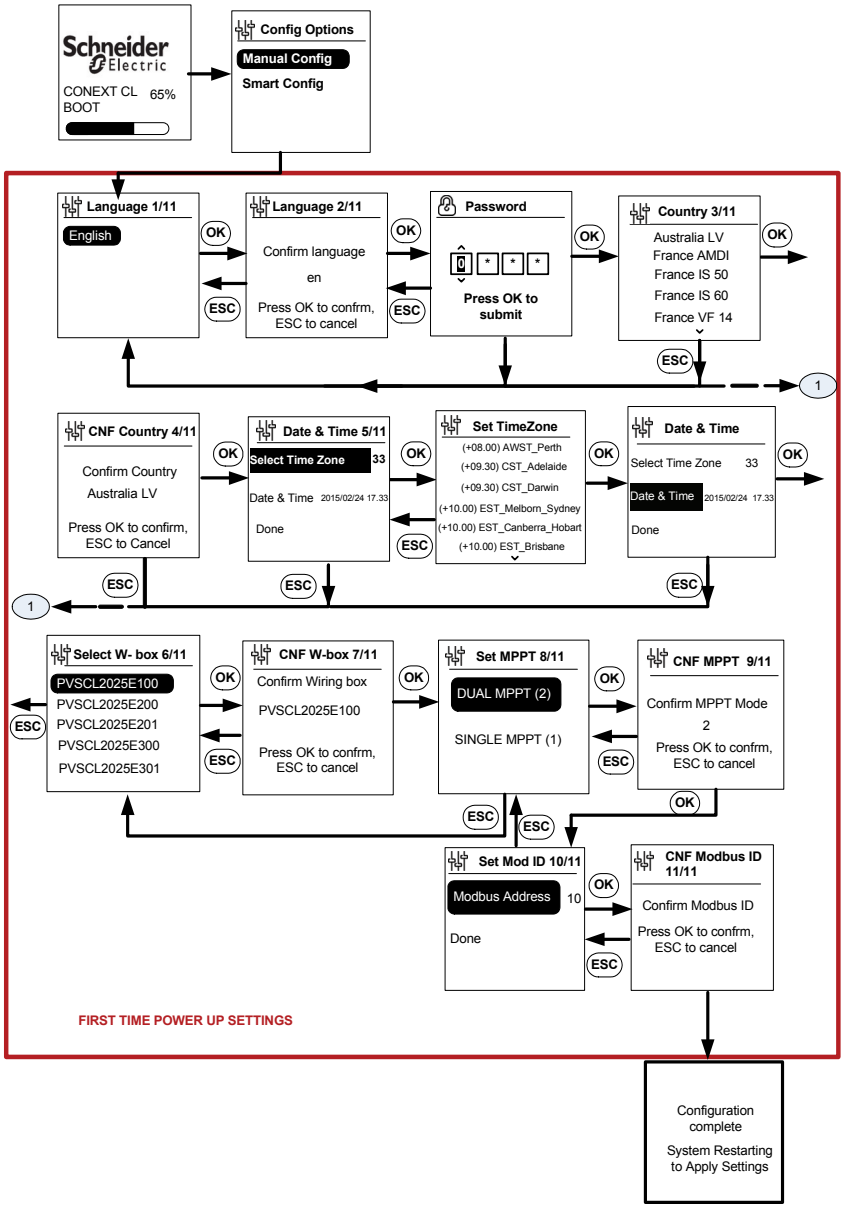


Figure 3-3 **First Time Power Up** screen

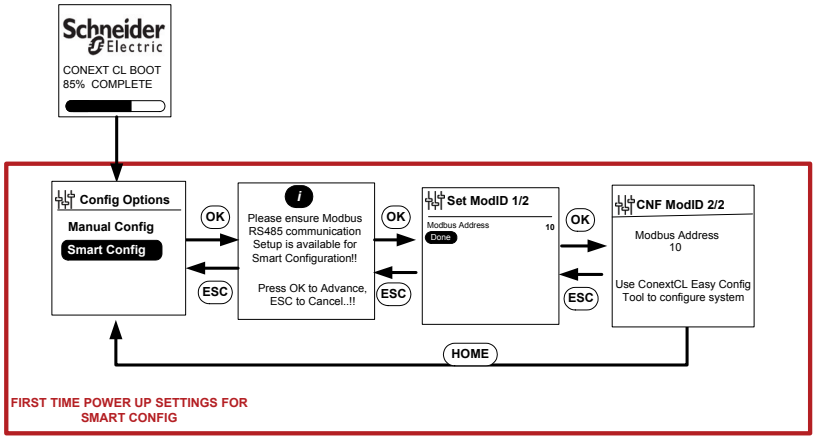


Figure 3-4 **First Time Power Up: Smart Config** screen

NOTICE

RISK OF EQUIPMENT DAMAGE

The wiring box selection in the LCD Menu Settings should match with the part number on the wiring box label.

Failure to follow these instructions can result in equipment damage.

When the inverter starts running, the home page displays a daily overview of the energy produced.

Menu Settings

There are a series of settings screens for configuring the inverter.

Settings screens for configuring the inverter

1. To select an item to edit, in the Settings screen, use the up/down keypad buttons. The selected item is highlighted.

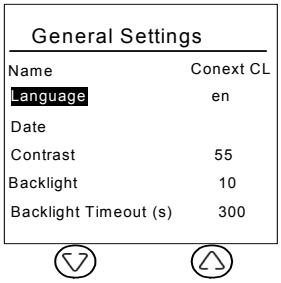


Figure 3-5 **General Settings** screen1

2. To edit the selected item, press the OK button.The first digit (or character) to edit is highlighted.

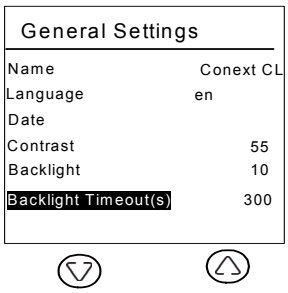


Figure 3-6 **General Settings** screen 2

- To increase/ decrease the highlighted value, press the **up/down** (˅ / ˄) arrows. Press **left/ right** keypad buttons to move the cursor in the left/ right direction.
- To write the new value in the configuration, press the **OK** button.
- To **cancel** the editing, press the **ESC** button.

Normal Power up

During normal power up, the screen shows the Schneider Electric logo and a progress bar indicating the power up progress. The inverter will boot up and complete the power on self test routine. On successful completion of normal power up, the LCD screen displays a daily overview of energy produced (Quick view).

Quick view

The home page now displays the:

- Energy harvested today
- Status of the inverter (for example, **On Grid**)
- Today's power curve

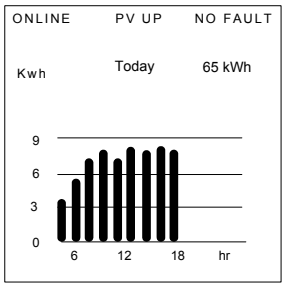


Figure 3-7 **Quick view**

Menu Structure

The following Figure 3-8 to Figure 3-20 shows the menu structure and navigation flow for accessing the different inverter settings and logs.

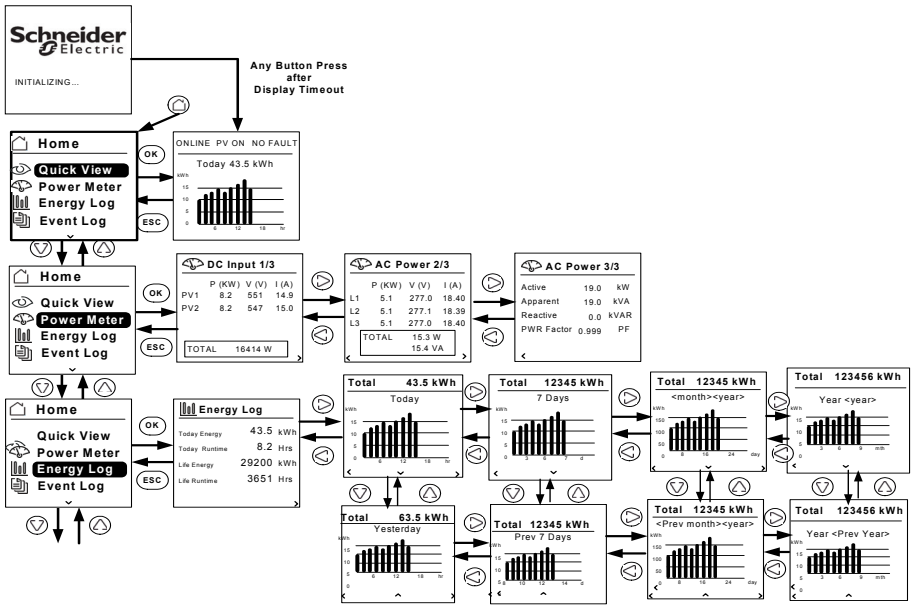


Figure 3-8 **Menu Structure -1**

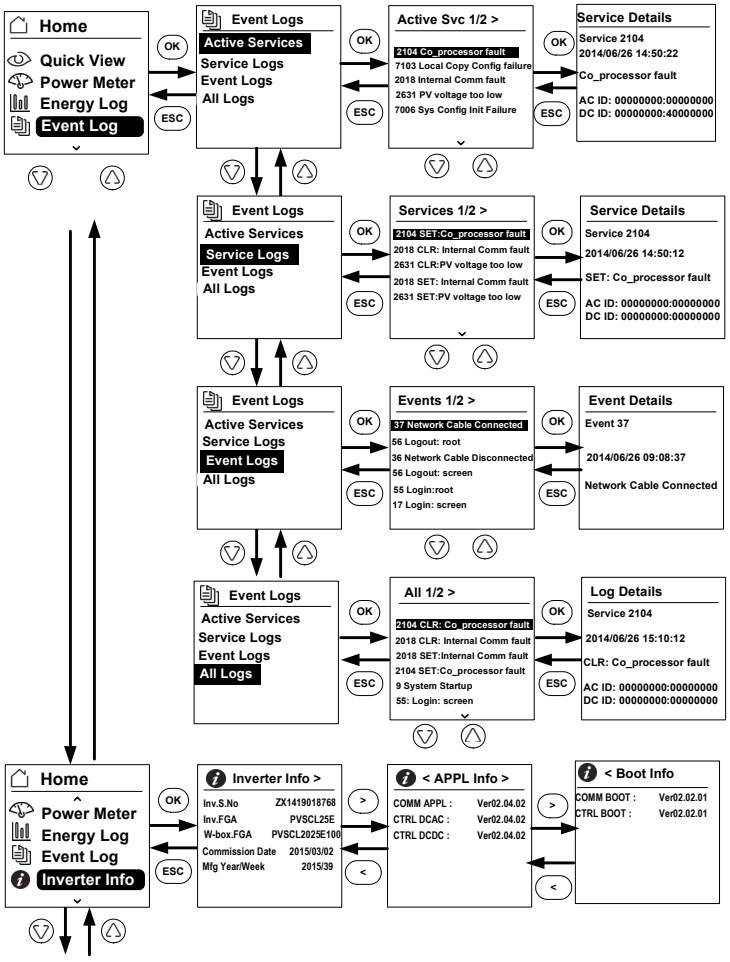


Figure 3-9 **Menu Structure- 2**

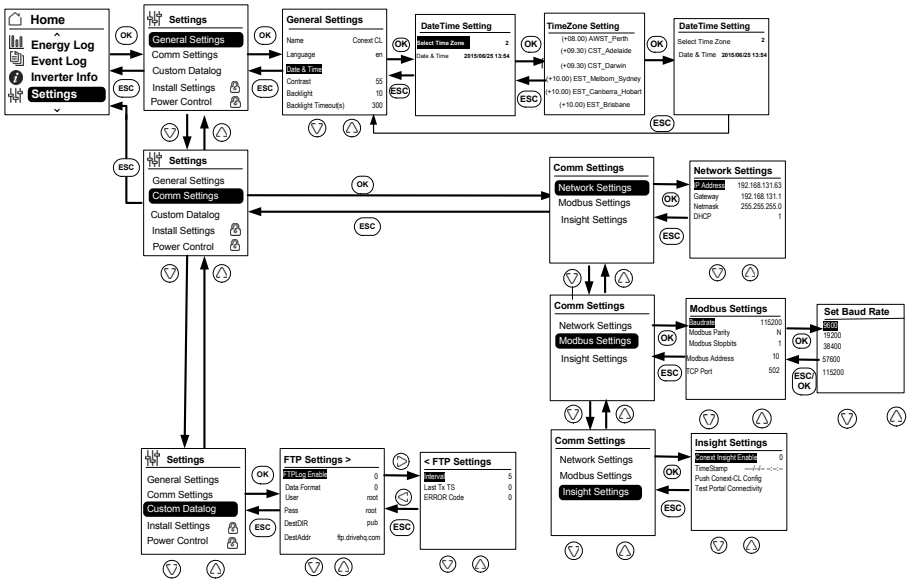


Figure 3-10 **Menu Structure -3**

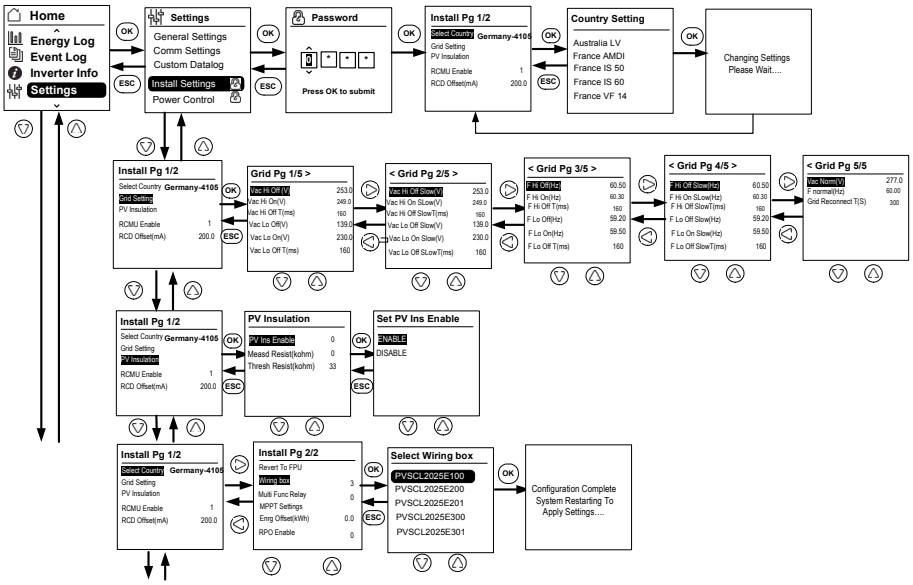


Figure 3-11 **Menu Structure -4**

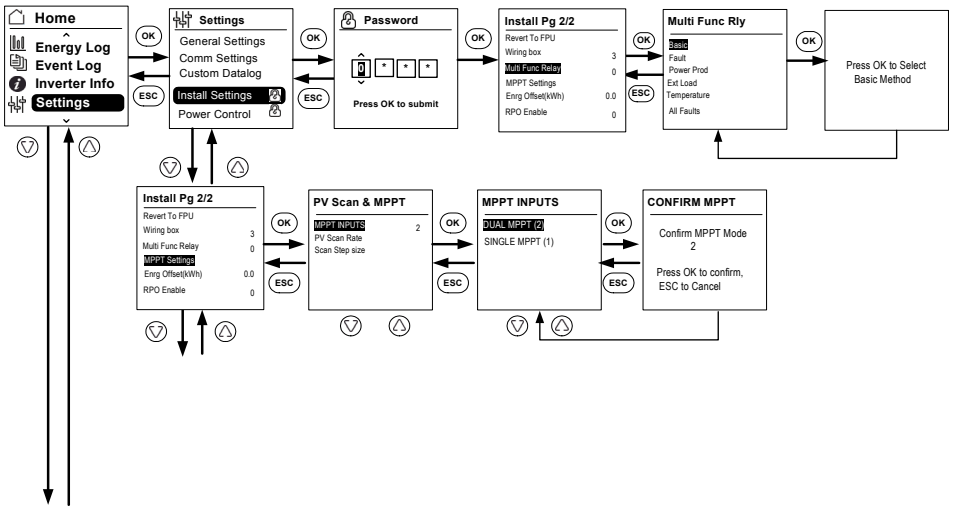


Figure 3-12 **Menu Structure -5**

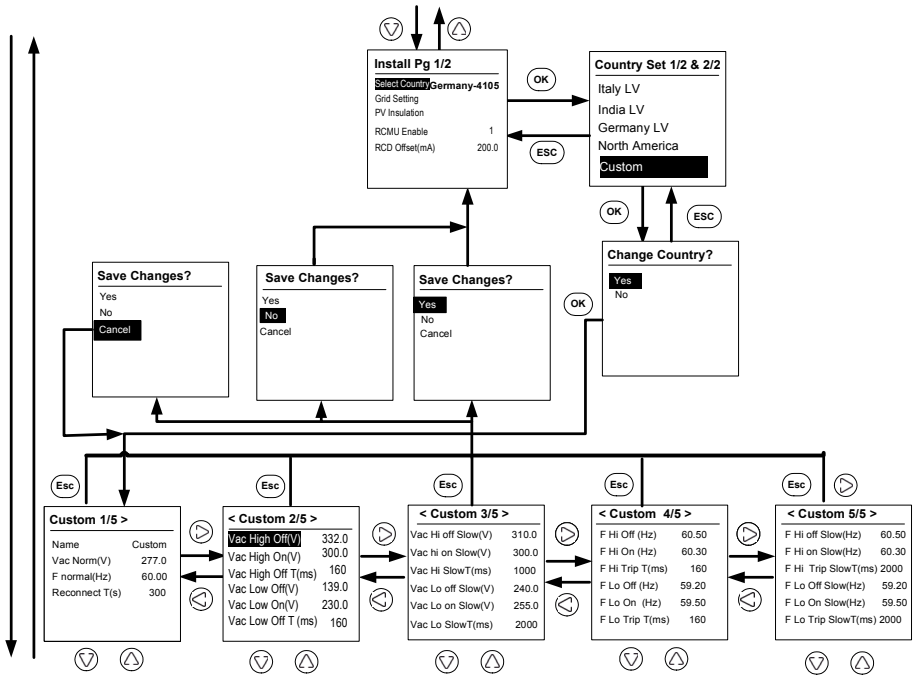


Figure 3-13 **Menu Structure -6**

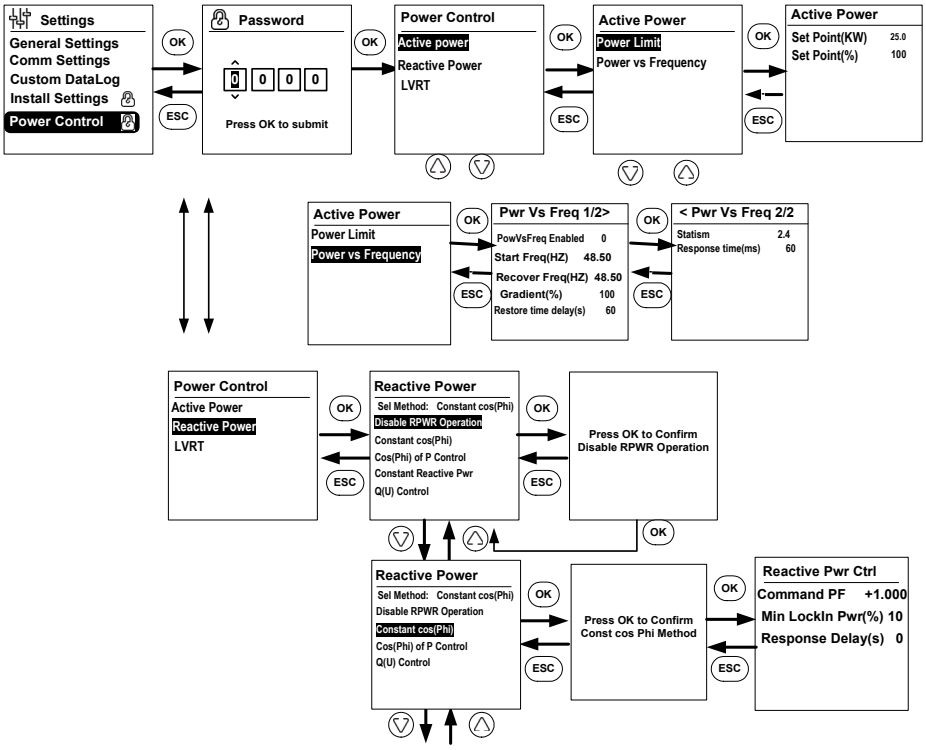


Figure 3-14 **Menu Structure - 7**

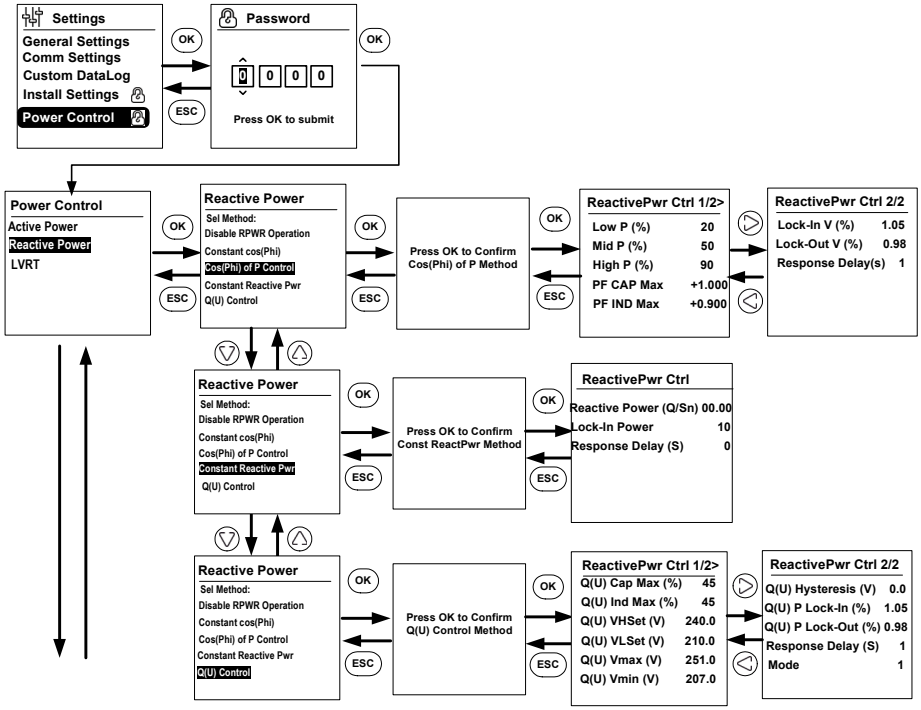


Figure 3-15 **Menu Structure -8**

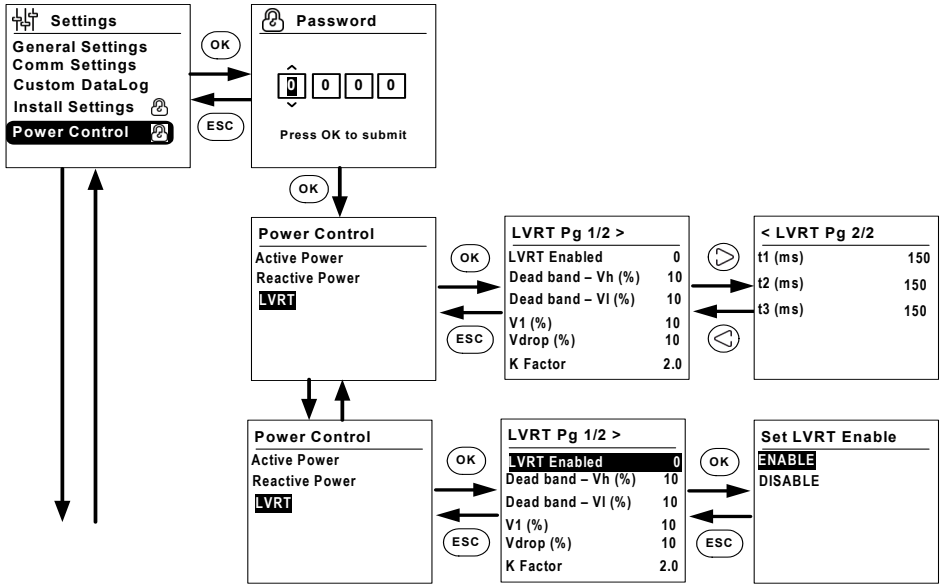


Figure 3-16 **Menu Structure - 9**

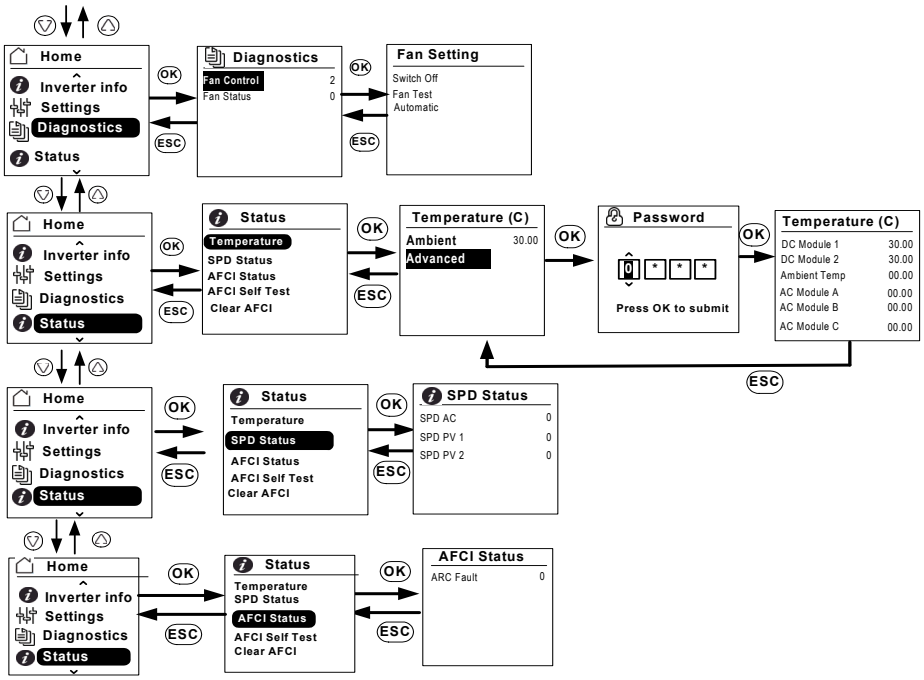


Figure 3-17 **Menu Structure - 10**

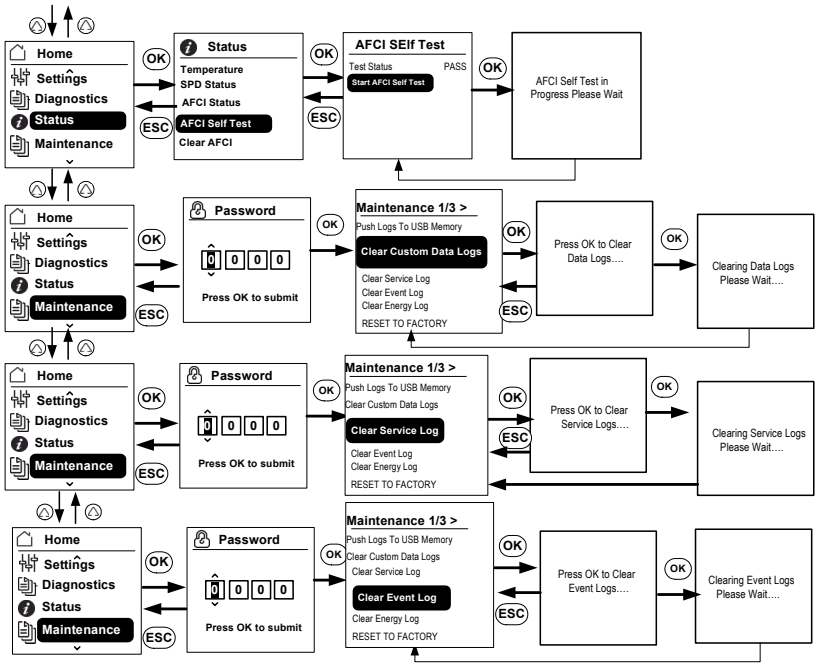


Figure 3-18 **Menu Structure - 11**

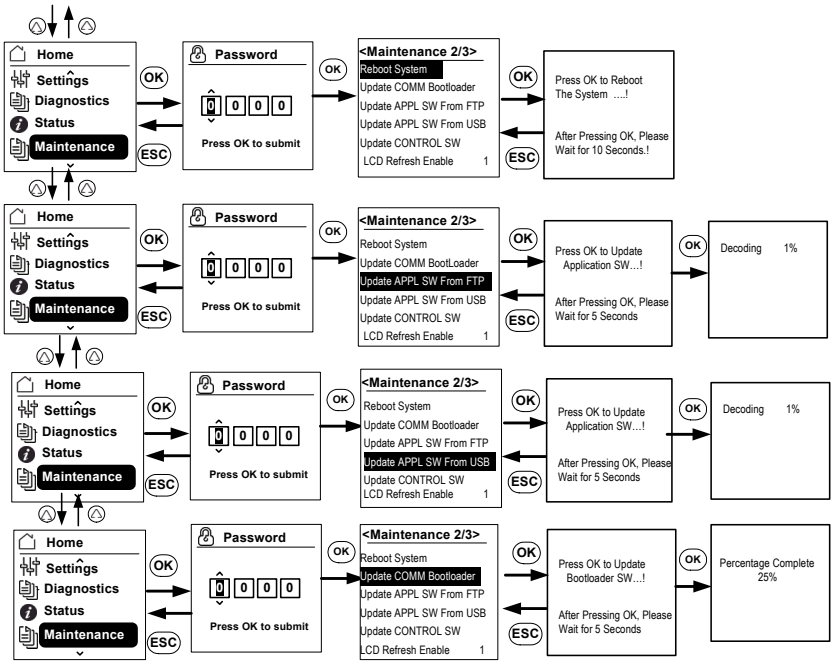


Figure 3-19 **Menu Structure - 12**

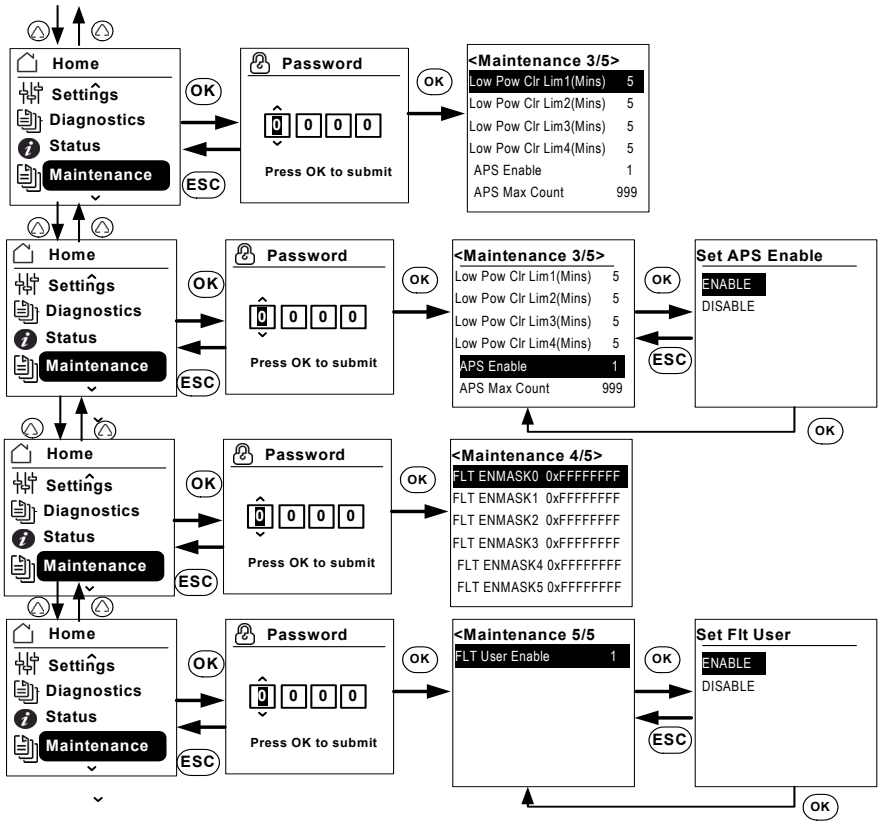


Figure 3-20 **Menu Structure - 13**

Home Page

To navigate through the menus:

- In the **Home** page, press any of the **four navigation** buttons.
- To go to the **previous** screen or to a **higher-level** menu, press the **ESC** button.

During the normal operation of the inverter, the LCD shows the Home page as shown in below.

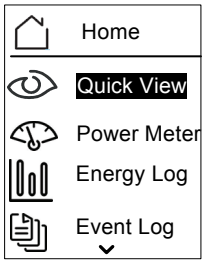


Figure 3-21 **Home page**

Inverter Information

The Inverter Information screen displays the following information about the inverter:

- Inverter serial number
- Inverter FGA
- Wiring box serial number
- Wiring box FGA
- Communication application firmware version number
- Communication boot loader firmware version number
- DC-AC control firmware application version number
- DC-DC control firmware application version number

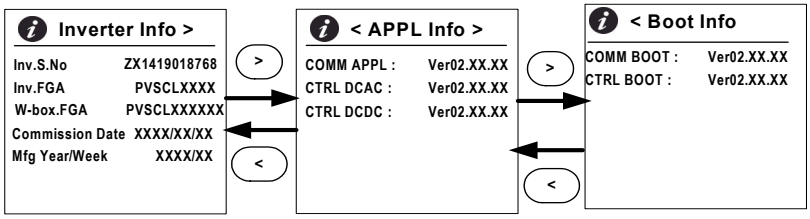


Figure 3-22 **Inverter Info**

To view the Inverter Information screen:

From the **Main menu**, select **Inverter Information**, and then press the **OK** button.

Logs

You can view the event logs and energy logs through the **Home page** screen as shown in Figure 3-12 on page 3-13.

Event Log

The event log shows a maximum of 10 most recent events. The most recent event is shown at the top of the list. There are four submenus under Event Log.

- Active Services

  - All Logs
  - Service Logs
  - Event Logs
- Active Services show the list of events that have occurred most recently and are not cleared.
- All Logs show both services and events as per the sequence of occurrence.
- Service Logs show all the events or warnings that have occurred during any abnormal operating condition.
- Event Logs show the list of all events.

Use the scroll button to navigate through the list of events. To know more details about an event, select the event and then press the **OK** button.

Energy Log

The Energy Log menu shows the power generation over the:

- Current or last year
- Previous and current month
- Previous and current week
- Yesterday’s and today's energy
- Energy summary

Use the scroll button to navigate through the list of sub menus. To view the energy produced over a specific period of time, select the appropriate energy log menu and then press the **OK** button.

Active/Reactive Power and LVRT Menu

NOTE: The menu is available based on the grid interconnection requirement for various countries. See local grid interconnection codes for the need to turn this feature **ON** or **OFF**, for the characteristic to select, and allowed values for the various parameters.

To display the Active/Reactive Power and LVRT menu:

1. From the **Main** menu, select **Power control**, and then press **OK**.
2. Use the navigation buttons as shown in Figure 3-1 on page 3-3, to enter each of the four digits in the password, to move to next digit and then press **OK.**

Active Power Control

To set the Power Limit:

You can limit the output active power of the inverter to a percentage of rated power (kVA).

1. Select the **Active / Reactive Power** and **LVRT** menu.
2. In the Set Point field (% or kW), use the ▼ and ▲ buttons to specify the percentage (kW) that you want to use as the limit. Valid range is 0 to 100%.

Setting the Frequency-Dependent Active Power Control

You can turn this feature **ON** or **OFF**, and adjust the settings to meet the utility requirements.

To set the frequency-dependent active power control:

1. Select the **Active / Reactive Power and LVRT** menu (See page no 3-14,3-15, and 3-16).
2. Select **Power vs frequency** and then press **OK**.
3. Select **ENABLE** and then press **OK**.

Specify the desired frequencies and gradient as per Figure 3-23 on page 3–23.

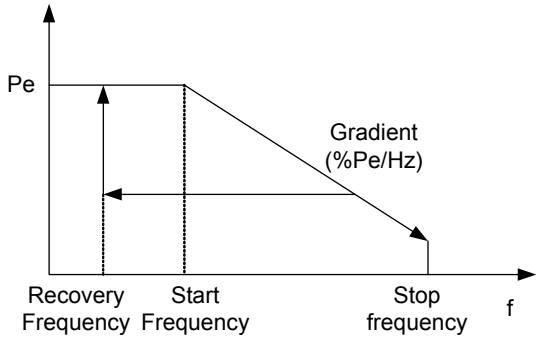


Figure 3-23 Power factor as a function of active power

- Start frequency is the frequency where active power de-rating starts.
- Recovery frequency value is the frequency where inverter will come out of frequency derating mode and starts increase in active power.
- Gradient is used to calculate the slope of derating curve. Statism is used for ITALY only to calculate the slope of power derating curve as per following equation

$$\text{Gradient (Italy only)} = \frac{200}{Statism}$$

For Autralia(AS4777.2) gradient will be calculated using following equation

$$\text{Gradient (Australia/NZ only)} = \frac{100}{(Stop\ frequency - Start\ frequency)}$$

- Restore time delay is the time where the inverter has to stay on the power if frequency comes back to normal till this time is up. Response time delay is the delay time for enabling the frequency derating mode.

NOTE: See local grid interconnection codes for the need to turn this feature ON or OFF, and the allowed values for each of the parameters shown in the above figures.

Setting the Reactive Power Control

There are four methods available for setting the reactive power control.

Note: Only one of the methods can be enabled at a time.

Refer the local grid interconnection codes to turn this feature ON or OFF, for the characteristic to select, and for the allowed values of various parameters.The available methods are:

- Fixed power factor (constant cosφ).
- Power factor as a function of active power (cosφ(P)).
- Reactive power as a function of voltage (Q(U)).
- Constant reactive power (Constant Kvar).

The inverter stops reactive power flow when the output power is below 10% of rated.

To disable any reactive power mode select **Disable RPWR Operation** on DUI.

Setting the Fixed Power Factor (Constant cosφ)

With this method, the inverter delivers reactive power determined by the available active power and the power factor you specified.

To set the fixed power factor (Constant cosφ):

1. Select the **Reactive Power** menu (refer Figure 3-11 on page 3-14).
2. Select **Constant cosφ,** and then press **OK**.
3. In the **Command PF** field, specify the **value** (from 0.8 capacitive (negative sign) to 0.8 inductive (positive sign)). The adjustment resolution is 0.01.
4. Specify the **Minimum lock** in power (output power above which inverter supplies reactive power).

Specify the **Response delay** (time lag from set point to final output).

Setting a Power Factor as a Function of Active Power (cosφ(P))

With this method, the inverter delivers reactive power determined by the available active power and the power factor. The power factor varies, depending on the output active power at that moment.

To set **cosφ(P)**:

1. Select the **Reactive Power** menu (refer **Figure 3-15** on page 3-15).
2. Select **cos φ** of P control, and then press **OK**.

3. In the **low P cutoff** field, specify the **% of maximum active power** value (refer **Figure 3-24 on page 3–26**). The adjustment resolution is 1%.
4. In the **Mid P cutoff** field, specify the **% of maximum active power** value (refer **Figure 3-24 on page 3–26**).
5. In the **High P cutoff** field, specify the **% of maximum active power** value (refer **Figure 3-24 on page 3–26**).
6. Select **PF CAP MAX** and specify the **value (0.8 to 1)**.
7. Select **PF IND MAX** and specify the **value (0.8 to 1)**.
8. Specify **lock in** voltage (grid voltage above which inverter supplies reactive power).
9. Specify **lock out** voltage (grid voltage below which inverter stops reactive power flow).

Specify the Response delay (time lag from set point to final output).

Setting Constant Reactive Power

With this method, the inverter delivers reactive power (Q) at a constant, specific level.

1. Select the **Reactive Power** menu.
2. Select C**onstant Reactive PWR**, and then press OK.
3. In the **Constant Reactive PWR** field, specify the value as % of nominal apparent power (S). Positive value for capacitive and negative value for inductive reactive power.
4. The adjustment resolution is 1%.
5. Specify **Minimum lock in power** (output power above that inverter supplies reactive power.).
6. Specify **Response delay** (time lag from set point to final output).

Setting Reactive Power as a Function of Voltage (Q(U))

This setting allows the inverter to vary the reactive power flow as a function of AC voltage.

To set reactive power as a function of voltage (Q(U)):

1. Display the **Reactive Power** menu (refer Figure 3-14 and Figure 3-15).
2. Select **(Q(U))** control, and then press **OK**.
3. In the **Q(U) CAP MAX(%)** field, specify the maximum capacitive reactive power value as % of maximum active power (refer **Figure 3-26 and Figure 3-27 on page 3-26**). The adjustment resolution is 1%.
4. In the **Q(U) IND MAX(%)** field, specify the maximum inductive reactive power value as % of maximum active power (Refer **Figure 3-26 and Figure 3-27 on page 3-26**). The adjustment resolution is 1%.
5. Specify **Q(U) Vhset, Q(U) Vlset, Q(U) Vmax, Q(U) Vmin, Q(U) Hyst**.
6. Specify **lock in** power (output power above which inverter supplies reactive power).

7. Specify **lock out** power (output power below which inverter stops reactive power flow).

Specify the **Response delay** (time lag from set point to final output).

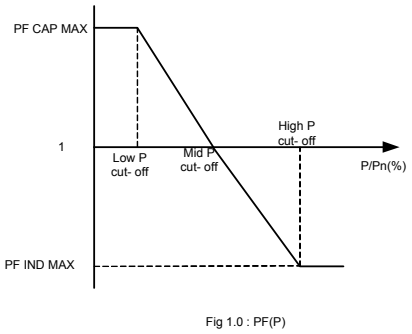


Figure 3-24 Power factor as a function of active power

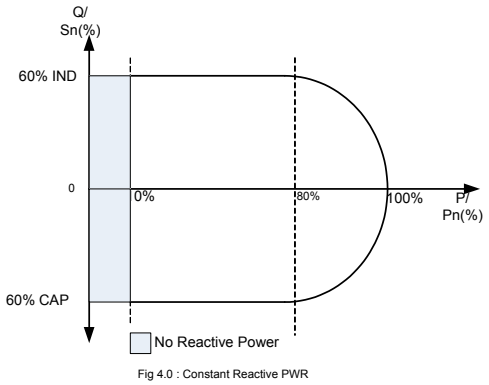


Figure 3-25 Power factor as function of reactive power

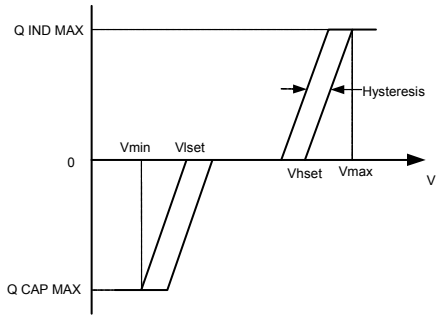


Figure 3-26 Reactive power as a function of voltage Curve A

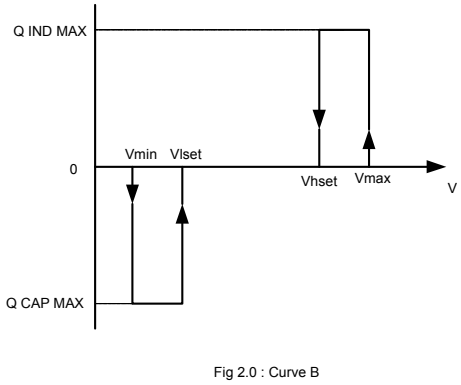


Figure 3-27 Reactive power as a function of voltage Curve B

Low Voltage Ride Through

NOTE: Low Voltage Ride Through (LVRT) is also known as Fault Ride Through (FRT), and refers to a feature that keeps the inverter online during short-duration voltage dips, to help support the grid.

From the FRT screen, you can set the following:

1. LVRT Enable: **ON** or **OFF**
2. Dead band - Vh: 1.1*Vn
3. Dead band - Vl: 0.9*Vn
4. K factor: Reactive current ratio during FRT.
5. Vdrop: If the grid voltage drops below this value, the inverter immediately trips.
6. t1: If the grid voltage drops and does not come back to U1 within t1 seconds, the inverter trips.
7. V1: voltage (% of Vn)
8. t2: If the grid voltage drops and does not come back to 0.9*Vn within t2 seconds, the inverter trips.

9. t3: If the grid voltage drops and does not come back to 0.9*Vn within t3 seconds, the inverter trips. The inverter might trip for a short time or for a long time.

NOTE: The screen is available only for the countries where LVRT operation is required.

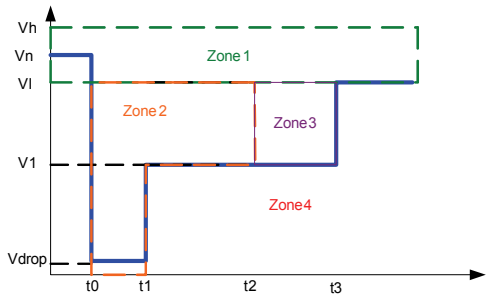


Figure 3-28 Low Voltage Ride Through

To Display the LVRT Screen:

1. From the Main menu, select **Power control**, and then press **OK**.
2. Use the ▼ and ▲ buttons to enter each of the four digits in the password, and then press **OK.** Figure 3-28 on page 3–28 shows graphs related to LVRT.

Additional information on the areas indicated by Zone 1, 2, 3, and 4 in Figure 3-28 on page 3–28.

a) Zone 1: Does not lead to disconnect from network.

b) Zone 2: Pass through fault without disconnecting from network, feed in* short circuit current.

c) Zone 3: Short-term disconnect from network.

d) Zone 4: Disconnects from network.

4 Troubleshooting

Chapter 4, “Troubleshooting” describes the event and service messages that might be displayed on the LCD of the inverter and the recommended solutions.

It contains information about:

- Troubleshooting Checklist
- Pushing Logs to USB Device
- Messages

Troubleshooting Checklist

Make sure to check the below mentioned points before contacting to customer care.

Table 4-1 Checklist

Site/Installer:		
Product Serial Number(s)		
Commissioning/Purchase Date		
Energy Produced till shutdown		
Warranty Expiration Date		
Software Version(s) Installed		
Attach Event Log, Service Log and Energy Log downloaded from inverter		
Detailed description of the problem:		
What is the problem (what happened)?		
When did the problem occur (when did it take place)?		
Where was the problem detected (where did it take place, consider environmental factors)		
How was the problem detected (how did it happen)?		
How many times has the problem been detected (how often has it happened)?		
Other details		
Attach any other useful information (photographs, reports, printouts) that will be useful in analyzing the issue.		
AC System		
Grid type (120/240, 230/400, etc)		
Measurements/readings during incident and point of measurement		
Conductor size/length (1 way)		
Fuse/Breaker rating		
Generator Make/Model/Power		
Surge Protection details		
Power quality/Harmonics for DG & Grid		

Table 4-1 Checklist

Neutral to Ground voltage with/ without DG		
Majority of load type (Motor, AC, lighting)		
Frequency of DG switching during day time		
Voltage/Phase/Frequency values		
Min/Max Voltage and Freq range		
LV/MV transformer details (Capacity type, Grounding etc)		
Single Line Diagram, detailing connection with DG, Voltage stabilizer		
Other		
Photovoltaic system		
	MPPT1	MPPT2
Modules installed (make/ model)		
Module specifications (Pmp/ Voc/Isc/T cof of Voc)		
Array configuration/Orientation		
Grounding system details		
Measurements/readings during incident and point of measurement		
Site record low/average high temperature		
Surge protection details		
Combiner box details		
Conductor size/length (1 way)		
Fuse/breaker ratings		
Age of array		
Accessory/Network		
Type (monitor, AGS, SCP)		
Connector/Protocols		
Source of power		
Network topology/layout		
Device address/port		
Cable type/length		

Table 4-1 Checklist

3rd party network devices (routers, controllers)		
External Application software and OS		
Output during incident and source of data		
Network traffic/activity level		
Other		

To save the event logs prior to service, refer to Table 4-2 on page 4–5.

1. Plug the USB flash device to the Conext™ CL's USB port.
2. Follow the instructions below on **Pushing Logs to USB Device.**
3. Go to **http://solar.schneider-electric.com/tech-support/** for Technical Support contact information.

Pushing Logs to USB Device

To save the Service, Event, Energy and Custom Data Logs to a USB flash device:

- From the Maintenance menu, select **Push Logs to USB memory**.

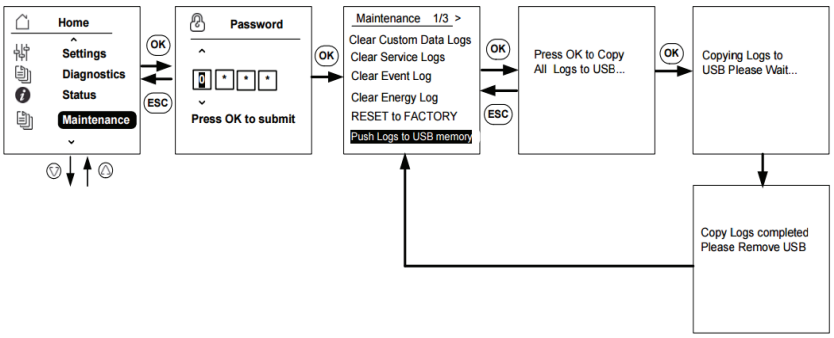


Figure 4-1 Pushing Logs to USB flash Device

Note: the Inverter may take more time in pushing all the logs to USB flash drive depends upon logs size.

Messages

The inverter indicates events/warnings on the display during any abnormal operating conditions. Table 4-2 describes alert messages that might be displayed on the LCD of the inverter.

Note: The Event code in the below table refers to the alert code that can be read through the Modbus Communications.

Table 4-2 Alert message descriptions

State	Event Code	Description	Causes	Recommended Corrective Plan
Services	10	**AC relay flt** Line tie relay is either welded or opened.	Inverter internal component failure.	**END User / Installer:** 1. Re-start the Inverter. 2. If the event persists, contact Schneider Electric customer service.
	0031	**AC Curr snsr flt** The Grid current sensor is not measuring the grid current accurately.		
	0032	**AC temp snsr flt** The AC Module temperature is either very high or low.		
	0033	**DC temp snsr flt** The DC Module temperature is either very high or low.		
	0047	**AC volt snsr flt** The Grid voltage sensor fails to measure the voltage accurately. Reset the unit by turning OFF the DC disconnect.		
	0131	**Low Eff flt** The losses in the unit are higher than normal and hence the efficiency is low.		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	0203	**DC init flt** Initialization of control processor fails.	Inverter internal firmware problem.	**END User / Installer:** 1. Check the configuration as per **First Time Power Up** section for any mismatch of parameters. 2. Re-start the Inverter. 3. If the event persist, upgrade the Firmware (refer the Firmware Upgrade process). 4. If the event persists, contact Schneider Electric customer service.
	0205	**AC init flt** Initialization of control processor fails.		
	0711	**Share sys cfg flt** The internal configuration shared between processors is incorrect.		
	0712	**AC int cfg flt** The internal configuration is incorrect on the control processors.		
	0713	**DC int cfg flt** The internal configuration is incorrect on the control processors.		
	0204	**DC BIST flt** Built in Self Test of the control processor fails	Inverter internal hardware problem.	**END User / Installer:** 1. Re-start the Inverter. 2. If the event persist, upgrade the Firmware (refer the Firmware Upgrade process). 3. If the event persists, contact Schneider Electric customer service.
	0206	**AC BIST flt** Built in Self Test of the control processor fails.		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	0702	**RCMU flt** The Earth leakage current is repeatedly detected to be greater than limited value	• Water logging or moisture around the PV panels. • Improper connection to protective earth. • Damaged PV wiring. • Foreign objects trapped between DC cable terminations and inverter protective earth (PE). • Electrical insulation from the PV system to protective earth is lower than safety limit or insufficient.	**END User / Installer:** 1. Check for any water logging or moisture around the PV panels. If yes, wait till the PV panel surroundings becomes dry. 2. Check the PV wiring and connections at junction boxes or terminals for any suspected damage or any dust accumulation or any trapped foreign objects. 3. If fault persists, recommended to perform insulation resistance test using an Insulation tester (Suggested testers: Schneider IM20 Vigil ohm or Fluke 1587 or similar). **NOTE:** Insulation Test shall be done by an authorized electrician with proper protective equipment. Insulation Test Guidelines: 1. Turn OFF both DC and AC and then turn ON DC and AC and observe if the alarm persists, Turn OFF Inverter. 2. Check the insulation resistance between (PV+) and (PV-) using a insulation tester. Follow the insulation tester guidelines for measurement procedure. 3. If the insulation resistance is less than configured value, check the installation for any possible insulation failure. If the insulation resistance is more than configured value, contact Schneider Electric customer service.
	0708	**RCMU Flt Redundan**t The Earth Leakage current is repeatedly detected to be greater than limited value**.** This fault is similar to '0702-RCMU flt', but detected by an independent redundant circuit, thus providing a double check for leakage protection		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	0705	**PV input wiring reversed.**	PV Positive and Negative wiring reversed.	**END User / Installer:** **Note:** The following instructions shall be performed by an authorized electrician only. 1. Switch OFF DC & AC. Disengage all the fuse holders inside the wiring box. 2. Check visually, any positive cable (red Color) connected to negative fuse holder block. Similarly check for any presence of negative cable (Black color) in positive fuse holder block. 3. With the help of digital multimeter, check the voltage measurement between PV positive with respect to PV negative terminals of each string at fuse holder input terminals. If voltage measured is negative value, then the respective string is reversed and needs correction. repeat the similar measurement for rest of the strings. Note: After fuse holders dis-engaged, live PV string voltage can be measured at the input of the respective string fuse holders.
	0710	**Sys cfg init flt** The System configuration done by the user/ installer is incorrect.	Configuration mismatch.	**END User / Installer:** 1. Check the configuration parameters as per **First Time Power Up** section. 2. Re-start the Inverter. 3. If the event persist, upgrade the Firmware (refer the Firmware Upgrade process).

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
Error	701	**DC injection err** The DC content in the AC output current is higher than rated value.	• Inverter internal parameters drift.	**END User / Installer:** *If the event persists, contact Schneider Electric customer service.
	706	**DC injection inst** The instantaneous value of DC content in the AC output current is higher than rated value		
	714	**RPO power mod err** RPO power module error.	• The RPO power module not operative.	**END User / Installer:** Contact Schneider Electric customer service.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2018	**AC inter-comm err** This error occurs, when the internal communication between processors in the control board fails after time out.	• Communication between unit (inverter) internal processors not functioning due to loose cable connection between control and communication printed circuit boards. • Unit internal control board power supply not operative.	**END User / Installer:** • Re-start the inverter. * If the event persists then contact Schneider Electric customer service.
	2101	**DC inter-comm err** This error occurs, when the internal communication between processors in the control board fails after time out.		
	2102	**DCAC comm err** Communication error in the Control processor detected by Comm processor.		
	2060	**AC low temp** The temperature on the AC power modules is lower than the limits. The unit does not start.	Ambient temperature can be less than minimum operating temperature.	**END User / Installer:** • Wait for ambient temperature raise above minimum operating temperature for inverter to start.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2061	**AC modules OT** AC module temperature above safe operating limits	• Ambient temperature can be higher than operating limits. • Insufficient air flow due to dust accumulation on air inlet and air outlet. • Cooling fan not operative.	**END User / Installer:** • Wait for ambient temperature to cool down to operating limits. Once ambient temperature is within operating limits, inverter recovers automatically. • Check air ventilation ducts for dust or any foreign objects accumulation. Clean ducts with a clean cloth or soft brush. • Ensure all fans are working by performing fan self diagnostic check as per **Fan maintenance** section. * If the event persists, contact Schneider Electric customer service.
	2062	**DC modules OT** The temperature on DC Power modules is beyond the limits. The ambient temperature is beyond the operating limits.		
	2401	**AC UF fast err** The frequency has fallen below the limit requiring immediate shutdown.	Utility frequency fluctuations are beyond the set limits.	**END User / Installer:** • Monitor the frequency, to record fluctuations beyond set limits. • Check for any deviation between measured values and grid set limits. Please refer respective grid set limits using **Display > install Settings > Grid Settings**. If any deviation found, please talk to local grid operator to adjust the parameters as per respective country grid code set limits. Note: Conext CL Inverter is automatically configured as per the selected country during first time power up.
	2402	**AC OF fast err** The frequency has risen above the limit requiring immediate shutdown.		
	2416	**AC UF slow err** The Grid Frequency is below the set limits.		
	2417	**AC OF slow err** The Grid frequency is above the set limits.		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2406	**AC UV fast err** The voltage has risen above the limit requiring immediate shutdown.	• Utility voltage fluctuations are beyond the set limits	**END User / Installer:** • Monitor the voltage, to record fluctuations beyond set limits. • Check for any deviation between measured values and grid set limits. Please refer respective grid set limits using **Display > install Settings > Grid Settings**. If any deviation found, please talk to local grid operator to adjust the parameters as per respective country Grid CODE set limits. Note: Conext CL Inverter is automatically configured as per the selected country during first time power up.
	2407	**AC OV fast err** The voltage has fallen below the limit requiring immediate shutdown.		
	2418	**AC UV slow err** The Grid Voltage is below the set limits.		
	2419	**AC OV slow err** The Grid Voltage is above the set limits.		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2408	**AC UV inst** The Grid Voltage is below the set limits instantaneously	• Poor power quality of connected grid. • Sudden glitches in voltage in terms of surge or swell.	**END USER /Installer:** Check the local grid operator for improving the grid quality.
	2410	**AC OV inst** The Grid Voltage is above the set limits instantaneously		
	2415	**AC OV inst** The Grid Voltage is above the set limits instantaneously	Average Grid Voltage taken for set time period (default 10 minutes) is more than normal limit.	**END User / Installer:** • Monitor the frequency, to record fluctuations beyond set limits. • Check for any deviation between measured values and grid set limits. Please refer respective grid set limits using **Display > install Settings > Grid Settings.** If any deviation found, please talk to local grid operator to adjust the parameters as per respective country grid code set limits. • Note: Conext CL Inverter is automatically configured as per the selected country during first time power up.
	2450	**No-Grid err** Grid is not Available	• Grid voltage not viable. • Improper AC wiring. • Loose connection. • AC cable disconnect.	**END User / Installer:** 1. Check the grid metering for Availability of grid 2. Check the AC circuit breaker status. 3. Visual inspect the AC Wiring for any damage. 4. With proper safety PPE, check the any loose AC wiring at terminations.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2411	**AC OC inst** The Grid Current is above the set limits instantaneously.	Sudden grid voltage distortions.	**END User / Installer:** * If the event persists, then contact Schneider Electric customer service.
	2460	**AC OC err** The current measured in any one phase is beyond the specified limits.	Sudden grid voltage distortions.	**END User / Installer:** * If the event persists, then contact Schneider Electric customer service.
	2605	**PV 1 OV err** The voltage measured at PV1 input terminal is greater than the specified limit. (> 950 V).	• Improper PV string sizing. • Abnormally low ambient temperature causing open circuit voltage to raise above the operating limit.	**END User / Installer:** • Verify the String sizing as per standard guidelines such that PV open circuit voltage is less than 950V under lower temperature for that region. • Check the ambient temperature and if it is abnormally low, wait till temperature raises to operating limits.
	2606	**PV 2 OV err** The voltage measured at PV2 input terminal is greater than the specified limit. (>950 V).	• Improper PV string sizing. • Abnormally Low ambient temperature causing open circuit voltage to raise above the operating limit.	**END User / Installer:** • Verify the string sizing as per standard guidelines such that PV open circuit voltage is less than 950V under lower temperature for that region. • Check the ambient temperature and if it is abnormally low, wait till temperature raises to operating limits.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2631	**PV UV err** PV voltages on both the channels are lesser than the specified value (<200 V).	• Low radiance. • PV cable not connected. • DC switch not operative.	**END User / Installer:** • Check the open circuit voltage in display. If Voltage equal to zero, check the proper contact of PV cables and terminations. • Ensure DC switch is in ON condition. Wait for solar irradiance to increase.
	2648	**Low Elf err** The losses in the unit are higher than normal so efficiency is low.	• Inverter internal control board calibration is loaded with incorrect parameters	**END User / Installer:** • Ensure to have the latest firmware version to correct this alert. Please download the latest version from www.sesolar.com. * If the event persists, contact Schneider Electric customer service.
	2624	**PV12 OC err** The current measured on both the PV channels is higher than the rated values.	• Overated PV String. • Inverter internal hardware not controllable.	**END User / Installer:** * If the event persists, then contact Schneider Electric customer service.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	2616 2646, 2647	**PV insulation err** **RCMU err red** **RCMU error detected.** Excessive steady state residual current or sudden change in residual current.	• Water logging or moisture around the PV panels. • Improper connection to protective earth. • Damaged PV wiring. • Foreign objects trapped between DC cable terminations and Inverter protective earth (PE). • Electrical insulation from the PV system to protective earth is lower than safety limit or insufficient.	**END User / Installer:** • This event will be periodically checked and unit recovers automatically once the event clears. • Check for any water logging or moisture around the PV panels. If yes, wait till the PV panel surroundings becomes dry. • Inspect the visual inspection of PV wiring and connections at junction boxes or terminals for any suspected damage or any dust accumulation or any trapped of foreign objects. • If fault persists, it is recommended to perform insulation resistance test using an Insulation tester (Suggested testers: Schneider IM20 Vigil ohm or Fluke 1587 or similar). **NOTE:** Insulation Test shall be done by an authorized electrician with proper protective equipment. Insulation Test Guidelines: • Turn OFF both DC and AC and then turn ON DC and AC and observe if the alarm persists, Turn OFF the unit. • Check the insulation resistance between (PV+) and (PV-) using a insulation tester. Follow the insulation tester guidelines for measurement procedure. • If the insulation resistance is less than configured value, check the installation for any possible insulation failure. If the insulation resistance is more than configured value, contact Schneider Electric customer service.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	7000	**Comm internal error**	The hardware in the communication board has failed. • Communication processor fails to communicate with the Control processors. • Initialization of the communication processor fails. • Internal communication with its peripherals fails. • Built in self test fails. • The file system is not proper or initialization of processor fails. • The memory test of comm processor fails. • The watch dog fails. • Incorrect configuration parameters are entered. • Communication with DUI processor fails. • MD5 sum NOT operative or firmware loading fails.	**END User / Installer:** • Re-start the Inverter and If the event persists, contact Schneider Electric customer service.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	8000	**AC internal err**	An Internal Error is detected by the processor due to the following conditions: • The grid current measured exceeds the rating of the unit. • The DC bus voltage is greater than the trip value. • The top or bottom DC bus voltage is greater than the trip value. • The voltage difference between top and bottom DC bus voltage is greater than the set value. • The DC bus voltage is lesser than the set value. • The DC voltage sensor fails to measure the DC BUS voltage. • The ADC reference is not within the tolerance of 1.5V. • The phase lock loop fails during inverting.	**END User / Installer:** • Re-start the Inverter and If the event persists, contact Schneider Electric customer service.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	9000	**DC Internal err**	• The PV current measured exceeds the rating of the unit. • The DC bus voltage is greater than the trip value. • The top or bottom DC bus voltage is greater than the trip value. • The voltage difference between top and bottom DC bus voltage is greater than the set value. • The DC bus voltage is lesser than the set value. • The DC voltage sensor fails to measure the DC bus voltage. • The ADC reference is not within the tolerance of 1.5V. • The auxiliary power supply output is out of range.	END User / Installer: • Re-start the Inverter. * If the event persists, contact Schneider Electric customer service with the display details.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
Warning	2633	**PV1 OC wrn** PV1 Over current detected, hence the power output from PV1 is stopped.	• Over sizing of PV panel. • Inverter internal hardware not controllable.	**END User / Installer:** * If the event persists, then contact Schneider Electric customer service
	2634	**PV2 OC wrn** PV2 Over current detected, hence the power output from PV2 is stopped.		
	4003	**Replace fan** Fan is not operative or fan EOL detected and needs fan replacement.		**END User / Installer:** *Purchase fan spare kit with part number 0J-0N-10482 replace as per procedure given in chapter **Maintenance.**
	4004	**Loss of cooling** Fan control circuit hardware not operative.		**END User / Installer:** * Contact Schneider Electric customer service.
	4061	**Ambient OT wrn**	• Ambient temperature is near to maximum operating limit. • Insufficient air flow due to dust accumulation on air inlet & air outlet. • Cooling fan is not operative.	**END User / Installer:** • This event automatically clears once the ambient temperature cools down below to the operating limit. • Check air ventilation ducts for dust or any foreign objects accumulation. If require clean ducts with a clean cloth or soft brush. • Ensure all fans are working by performing fan self diagnostic check as per fan maintenance section.
	4065	**DC mod1 OT wrn**		
	4066	**DC mod2 OT wrn**		
	4660	**AC mod OT wrn**		

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	4068	**DC mod1 OT trip** The DC Module 1 over temperature is detected and the power output from PV1 channel is stopped.	• Ambient temperature more than maximum operating limit. • Insufficient air flow due to dust accumulation on air inlet & air outlet • Cooling fan is not operative	**END User / Installer:** • This event automatically clears once the ambient temperature cools down below the limit and unit recovers back to operation • Check air ventilation ducts for dust or any foreign objects accumulation. If required, clean ducts with a clean cloth or soft brush. • Ensure all fans are working by performing fan self diagnostic check as per **Fan maintenance** section.
	4069	**DC mod2 OT trip** The DC Module 2 over temperature detected and power output from PV2 channel is stopped.		
	4656	**PV1 UV wrn** PV voltages on both the channels are lesser than the specified value (<200 V).	Insufficient irrandiance.	**END User / Installer:** • Wait for more time, till sufficient irrandiance established to start the inverter.
	4657	**PV2 UV wrn** PV voltages on both the channels are lesser than the specified value (<200 V).	Insufficient irrandiance.	**END User / Installer:** • Wait for more time, till sufficient irrandiance established to start the inverter.
	4700	**Low power wrn**	Insufficient irrandiance.	**END User / Installer:** • Wait for more time, till sufficient irrandiance established to start the inverter.

Table 4-2 Alert message descriptions (Continued)

State	Event Code	Description	Causes	Recommended Corrective Plan
	4661	**PV1 SPD service** The SPD module connected on the PV1 input channel reached EOL and needs replacement.		**END User / Installer:** • Purchase SPD spare kit with part number 0J-0713 and replace as per procedure given in document 993-0522 Rev B.
	4662	**PV2 SPD service** The SPD module connected on the PV2 input channel reached EOL and needs replacement.		
	4663	**AC SPD service** The SPD module connected on the AC output channel reached EOL and needs replacement.		

5 Maintenance

Chapter 5, “Maintenance” contains information and procedures for performing preventive maintenance on the inverter and the wiring box.

It contains information about:

- Periodic Maintenance
- Performing General Maintenance
- Semi-Annual Maintenance
- De-Commissioning
- Firmware Upgrade process

Periodic Maintenance

The term **qualified personnel** is defined in page iii of this manual. Personnel must be equipped with appropriate PPE and follow safe electrical work practices. The inverter is energized from the AC grid and up to four PV circuits. Before servicing the inverter or accessing the wiring box, disconnect all the sources and wait at least five minutes to allow the internal circuits to discharge. Operating the RPO (Remote Power Off) circuit or switching off the inverter does not isolate the inverter from all the power sources. The internal parts and the external wiring remain live unless the PV and AC circuits are disconnected as appropriate for each model of the inverter.

To ensure reliable operation of the inverter, it is recommended for a semi-annual maintenance cycle, based on less severe environment site conditions. For sites with blowing dust or for sites subject to extreme temperatures, frequency of the maintenance cycle should be increased.

Note: Use only original spare parts provided by the manufacturer. Use of non-original parts invalidates the warranty.

For any problems associated with the inverter, contact Schneider Electric.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK AND FIRE

- All electrical work must be done in accordance with local electrical codes.
- The Conext™ CL inverter has no field/ user serviceable parts inside, only the wiring box has user replaceable parts (Fuse & SPD)*. To be installed and serviced only by qualified personnel equipped with appropriate PPE and following safe electrical work practices.
- Before installation, de-energize the AC and PV sources using external disconnecting means provided in the installation, and test using a meter rated at least 1000 VDC and 600 VAC to make sure all circuits are de-energized. Follow a lock-out tag-out procedure.
- Do not connect the PV conductors until the inverter is earthed either through the AC connection or through the earthing terminal.

Failure to follow these instructions will result in death or serious injury.

*Refer applicable model number in **Wiring Box Configurations** on page 2-13.

Factors Affecting the Inverter Performance

This section describes several factors that affect the performance of the inverter.

PV Array Factors

- PV array ratings

PV arrays are rated under standard conditions as listed below:

- specified illumination (1000 W/m^2)
- spectrum of the light
- specified temperature (25º C/ 77 º F)

This is called the Standard Test Condition (STC) rating and is the figure that appears on the PV module nameplate label.

- Expected Performance

Due to several unavoidable environmental factors, a PV array produces only around 60 to 70% of its peak STC-rated output for a well designed and installed PV system on a typical day.

- Temperature and reduced output

The PV array temperature affects the output of the entire system. As the temperature of the array surface rises, its energy output decreases. The arrays mounted on roof also collect the heat generated by the roof surface (or trapped under the array) and will produce less output than pole-mounted arrays, which allow greater air circulation behind the panels.

Note: The Conext™ CL inverter reduces the energy output to protect its electronic circuits from overheating and to protect from possible damage under high heat conditions. For maximum output under hot climate, mount the inverter in a shaded location with good air flow.

- Partial shade

The shading of even only a single module of the array reduces the output of the entire system. For example, the shadow caused by a utility wire or tree branch on a portion of the array's surface. This reduces the total output, though the output loss is not proportional to the shading.

The Conext™ CL inverter is designed to maximize its energy production in the above situation using its MPPT algorithm.

Other Factors

Other factors that contribute to system losses are:

- Dust or dirt on the array
- Fog or smog
- Mismatched PV array modules, with slight inconsistences in performance from one module to another

- Wire losses
- Utility grid voltage

For additional information and technical notes concerning PV array performance, refer to solar.schneider-electric.com.

Performing General Maintenance

Follow these simple routines to ensure long years of service and optimal performance of the inverter.

- Keep the unit away from dust and debris.
- Clean the PV array under non-illuminated conditions whenever it is visibly dirty.
- Periodically inspect the system to make sure that all the wiring and supports are securely in place.
- Maintain a log of system performance readings so that you can recognize when the performance becomes inconsistent.

Semi-Annual Maintenance

Have qualified personnel (as defined on page 1) perform the following semi-annual maintenance:

1. Visually inspect all the conductors and connectors at the bottom of the inverter for signs of corrosion or overheating.
2. Check that all the connectors, screws, and cables are connected properly and are tightened to the proper torque specified in this manual.
3. If there are any defective parts, contact Schneider Electric.

Note: For detailed information on service procedures refer to the Conext™ CL- Service Procedures - Fan Replacement.

4. Clean the louver cover and fans:
   a) Loosen the two screws of the louver cover (one screw at each of the corners of the cover, as shown by the arrows in Figure 5-1 on page 5-5 and Figure 5-2 on page 5-5).

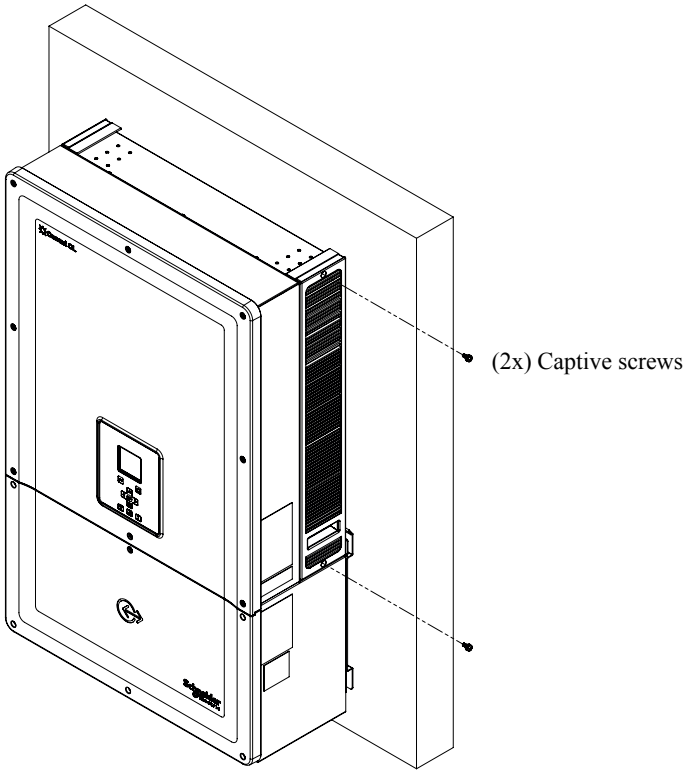


Figure 5-1 **Loosening the louver cover- right side**

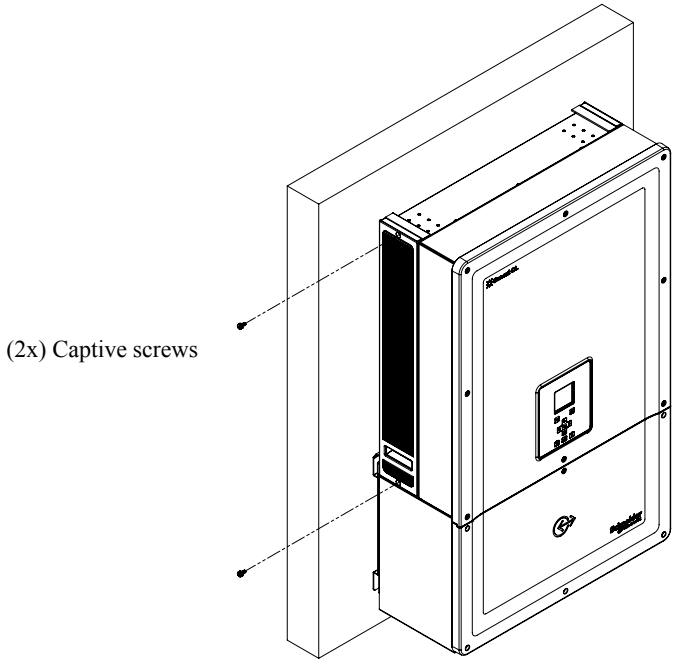


Figure 5-2 **Loosening the louver cover- left side**

b) Remove the louver cover as shown in the figure below.

i. Slide up the louver cover.

ii. Pull out the louver cover.

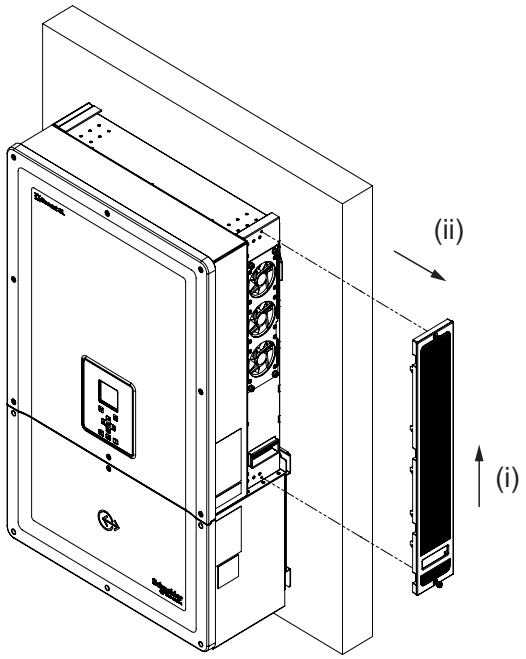


Figure 5-3 **Removing the louver cover- right side**

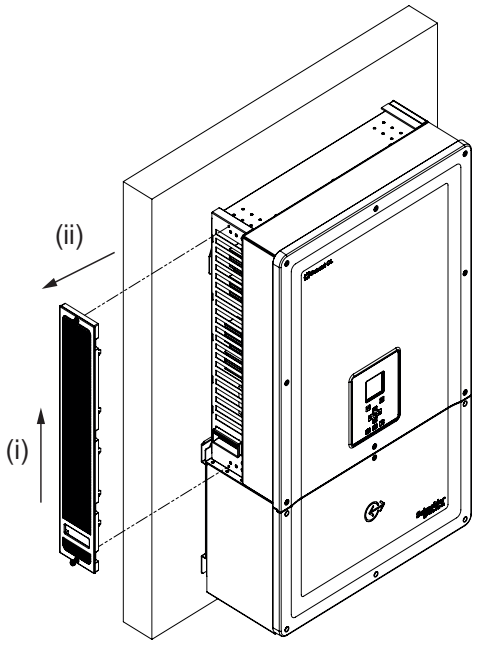


Figure 5-4 **Removing the louver cover- left side**

Cleaning the Louver Cover

After removing the louver cover gently with a screw driver, clean the cover with a soft brush, paint brush or compressed air. Ensure that the rear enclosure is covered properly while cleaning, to prevent the entry of foreign bodies.

Cleaning the Fans

The fans are located at the right hand side of the unit.

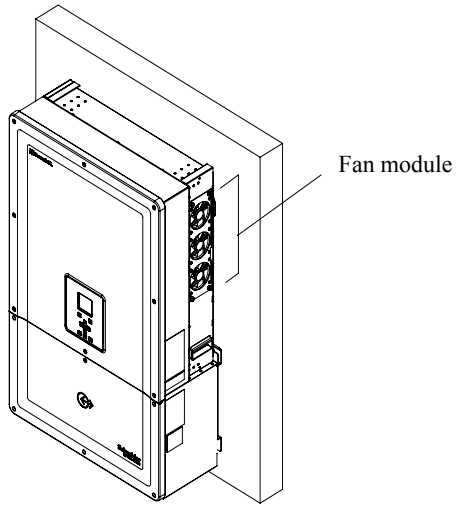


Figure 5-5 **Fan location**

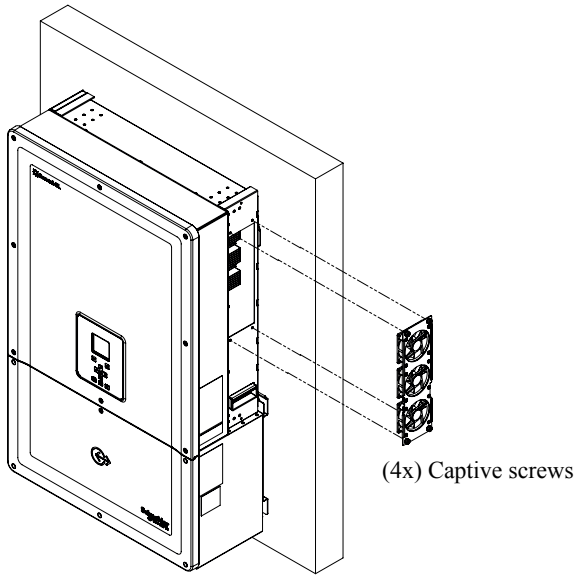


Figure 5-6 **Removing the fan**

A typical fan removal is as shown in Figure 5-6.

Fan maintenance

1. Unfasten the screws of fan module and remove the fan gently with a screw driver.
2. Unlock the fan connectors as shown below in Figure 5-8.
3. Take the fan out and clean it only with a soft brush or clean cloth.

Note: Handle the fan connector gently to avoid any physical damage.

NOTICE
RISK OF EQUIPMENT DAMAGE Do not use compressed air for cleaning the fan, as this may damage the blades of the fan. **Failure to follow these instructions can result in equipment damage.**

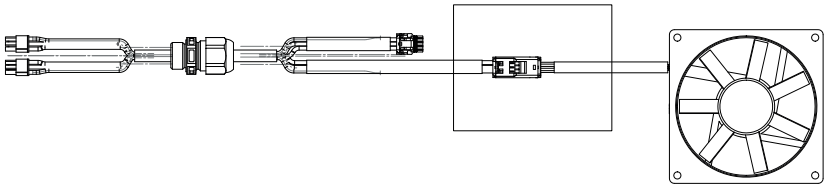


Figure 5-7 **Removing the fan connector**

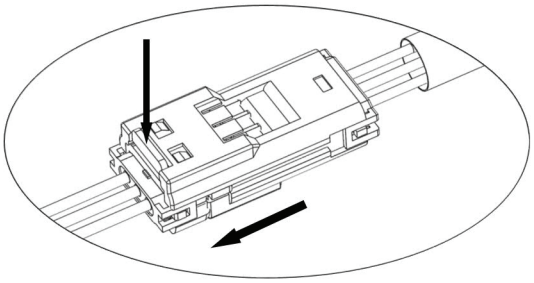


Figure 5-8 **Unlocking the fan connector tabs**

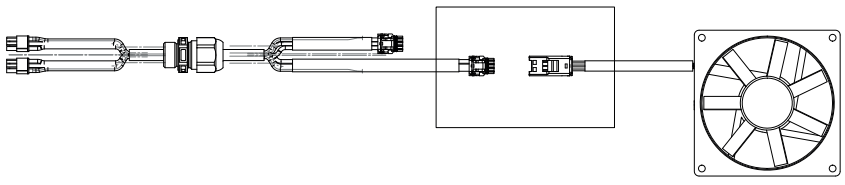


Figure 5-9 **Inserting the fan connector**

4. Insert the fan connectors back as shown in Figure 5-9. Make sure that the connector clicks in place.

5. Mount the fans back at proper location, refer to the Figure 5-5.
6. Insert the louver covers back and ensure that the louver covers are secured properly in place, refer to the Figure 5-3 and Figure 5-4.
7. Check for proper working of fans using the Diagnostics menu as shown in Figure 5-10.

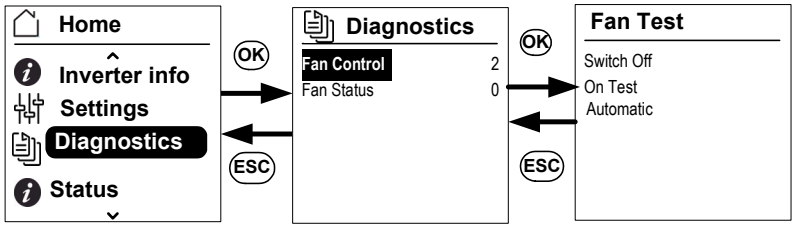


Figure 5-10 **Diagnostics menu**

SPD Replacement

If any of the SPDs reach End of Life, there will be a warning message active on the display. In the event of SPD open fault, follow the procedure below:

- Disconnect the DC and AC power to the wiring box through appropriate external means.
- Open the wiring box.
- Inspect the PV and AC wiring and rectify any short circuit or other faults on the input and output PV array circuits.
- Observe the inspection window provided in the SPD cartridge.
  - A red color in the cartridge indicates that the SPD is damaged.
- Replace the damaged SPD cartridge with a new working cartridge.
- Clear the SPD protection open event on the display.
- Close the wiring box.

The above mentioned procedures should be performed only by a trained technician.

The ordering details for SPD spare parts:

0J-530-2431-Z: DC SPD 1000V 2POLE -25 - 60C TYPE2 ROHS - IEC

0J-530-2586-Z: AC SPD 3P +NEU A9L16559 TYPE2 ROHS - IEC

Fuse Replacement

In the event of a short circuit in any of the PV string, the inverter will display **Low PV1 input voltage** or **Low PV2 input voltage** event message, and there could be a possibility of string fuse failure.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, FIRE AND EQUIPMENT DAMAGE

- Do not attempt to replace the fuse without rectifying the PV array short circuit fault, failing to which, there can be a risk of arc.
- Turn Off the DC and AC breaker before opening the wiring box cover.

Failure to follow these instructions will result in death or serious injury.

.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Dc disconnect located in the bottom of unit, switch OFF before doing any service.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not open fuse holders under PV load.

Failure to follow these instructions will result in death or serious injury.

To replace the fuse,

1. Turn OFF the DC and AC breaker before opening the wiring box cover.
2. Turn OFF the DC disconnect located in the bottom of wiring box.
3. Open the wiring box cover.
4. Inspect the PV circuit and rectify if there are any faults.
5. Remove the fuse holder insulator, refer to **Torque Table.**

Note: Keep fuse holder insulator safely.

6. Replace the faulty fuse with a new one.
7. Assemble the fuse holder insulator, refer to **Torque Table.**
8. Close the wiring box cover.

Recommended Fuse: Part number: PV1510F

Make: Cooper Bussman

Rating:1000 VDC, 15 A.

The ordering details for FUSE and FUSELINK:

FUSE: Part number: PVSCL2025FUSE

FUSELINK: Part number: CL2025FUSELNK (only for two strings/ MPPT)

De-Commissioning

To decommission the inverter

1. Turn Off the AC and DC breaker.
2. Open the wiring box cover as shown in Figure 2-25 on page 2-27.
3. Remove all the communication interface connections.
4. Unlock the inverter and wiring box power connectors using the thumb screw provided. Refer to the Figure 2-31 on page 2-30.for the connector location.
5. Unfasten the guide bush screw of the wiring box, refer to the Figure 2-30 on page 2-30 for the screw location.
6. Ensure the inverter is free to lift from the wiring box.
7. Lift the inverter from the mounting bracket and keep it in a safe place.
8. Close the wiring box cover. Refer to the Figure 2-32 on page 2-31.

To decommission the Wiring box

After de-commissioning the inverter,

1. Remove the AC and DC wiring.
2. Close the connector cover using the guide bushing. Refer to the Figure 2-26 on page 2-28 for guide bushing location.
3. Unfasten the four M8 screws. Refer to the Figure 2-24 on page 2-27 for screw location.
4. Remove the wiring box from the bracket and keep it in a safe place.

Firmware Upgrade process

The below mentioned procedures should be performed only by a trained technician.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

A voltage of 1000 VDC and AC grid voltage will be present inside the wiring box. Ensure to use all the necessary PPE.

Failure to follow these instructions will result in death or serious injury.

Note: During firmware upgrade process, ensure:

- not to disconnect the interface cables.
- no power interruption happens.

Such interruptions cause unsuccessful firmware upgrade.

In Conext™ CL, the firmware can be upgraded by using any of the following methods:

- USB (Local firmware upgrade)
- Ethernet (Local/ Remote firmware upgrade)

USB

For upgrading the firmware locally, use an external USB flash drive (not included), and follow the steps as described below:

Recommended USB drives are:

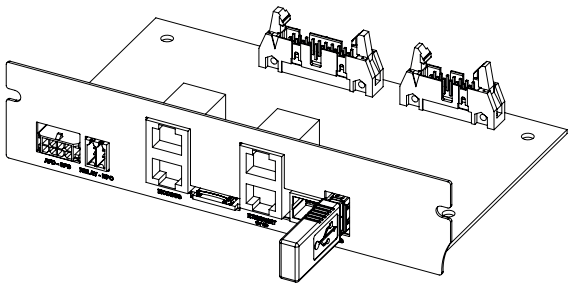
a) Sandisk - refer to http://www.sandisk.com/home/usb-flash/cruzer-blade.

b) Toshiba(4GB) - refer to http://us.toshiba.com/computers/storage/usb-flash/usb-2/thn-u202w0080u4.

c) Kingston- refer to http://www.kingston.com/us/usb/personal_business/dtse9h.

d) Transcend(TS4GJF350): refer to http://www.transcend-info.com/Products/No-375.

1. Ensure to delete older firmware versions stored in the USB.



USB Flash drive

Figure 5-11 Communication interface with USB flash drive

2. Copy the latest firmware into the USB drive that will be used to load the firmware to the inverter. The latest version of firmware can be downloaded from http:// solar.schneider-electric.com/.
3. Open the wiring box cover.
4. Ensure both AC and sufficient PV input (>300V) is available to power up control circuit of the inverter.
5. Connect the USB drive to the USB device socket. The inverter display will now ask for user confirmation to start the upgrade process.
6. Press **OK** button. The inverter now starts upgrading the new firmware available in the USB drive. The upgrade process will take approximately 20 to 25 minutes.

After completing the upgrade process, the inverter will restart.

Note:

- The user confirmation window will be active only for few seconds.
- If the **OK** button is not pressed, **NO REQUEST RECEIVED** appears and the system returns to the home screen.

7. Under **Inverter Info** menu verify the firmware version number in the display with the latest firmware version number. If it matches, follow step 10 or else step 9.

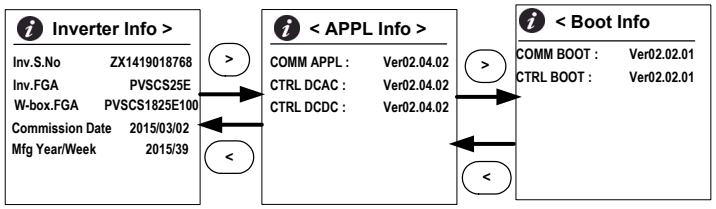


Figure 5-12 **Inverter Info**

8. If COMM APPL version displayed is not matching then repeat the step 2 and after firmware upgrade step is completed make sure the version matches.
9. Check the CTRL DCAC, CTRL DCDC are matches with firmware version if not go to LCD menu (Home> Maintenance Menu) select Update Control SW.
10. On successful completion of the upgrade process, unplug the USB drive.
11. Close the cover of the wiring box properly.
12. In case of any event or failure in the upgrade process, contact Schneider Electric.

Ethernet (Web-pages)

1. Establish the connection as mentioned in **Web Interface** on page 2-51.
2. Copy the latest firmware to the personal computer. The latest version of firmware can be downloaded from solar.schneider-electric.com.

The web-page dashboard screen is displayed as shown below.

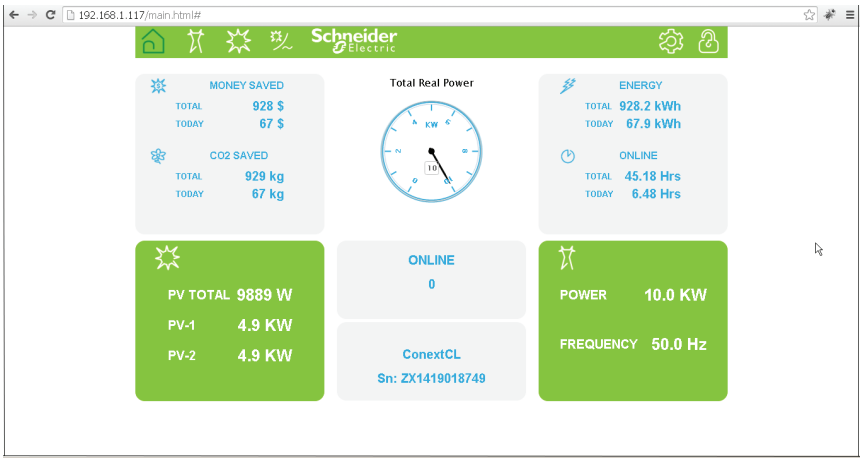


Figure 5-13 **Web page dashboard** screen

3. Click on the **Settings** icon( ).

The below screen appears.

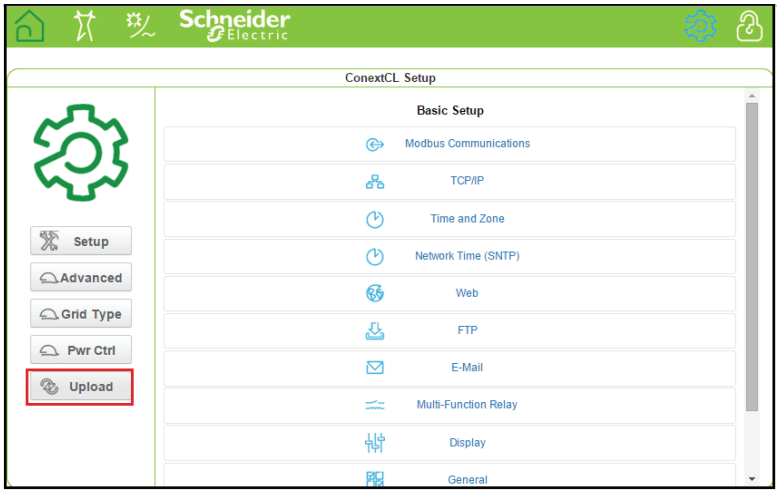


Figure 5-14 **Web page upload** screen

4. Select the **Upload** option (displayed on the left hand side of the screen).

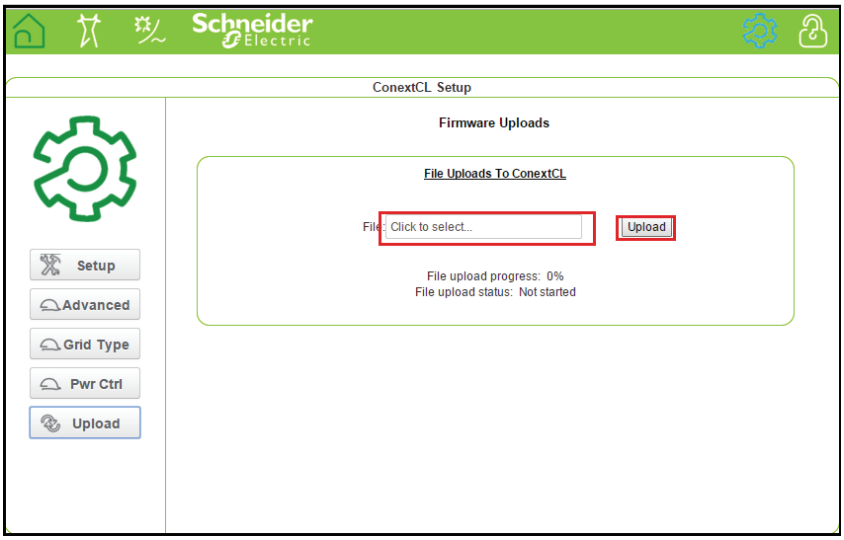


Figure 5-15 **Web page firmware upgrade** screen

5. Click on the **Click to select** field and navigate to the firmware file in the personal computer.
6. Select the **file** and click **Upload** button to start the process.
7. Under **Inverter Info** menu verify the firmware version number in the display with the latest firmware version number. If it matches, perform step 10 or else step 9.

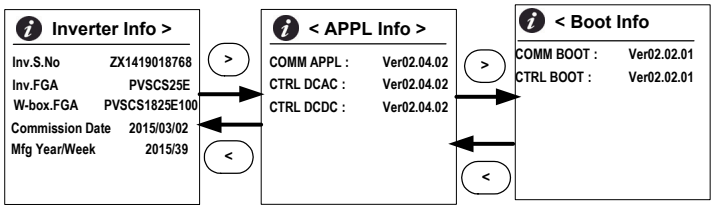


Figure 5-16 **Inverter Info**

8. If COMM APPL version displayed is not matching then repeat the steps above and after firmware upgrade step is completed make sure the version matches.
9. If control firmware version (CRTL DCAC, CTRLDCDC) are not matching then use the Update Control SW option in the DUI to update the control processor firmwares.
10. Click **upload** to start the firmware upgrade process. On successful completion of firmware upgrade process, the inverter will reboot.

A Specifications

Appendix A provides the environmental, electrical, and other specifications for the inverters.

Note:

- Specifications are subject to change without notice.
- Refer to solar.schneider-electric.com for the latest list of approved countries.

System Specifications

Table A-1 System specifications

Parameter	Unit of measurement	Conext™ CL 20000E	Conext™ CL 25000E
Input (DC)			
Full power MPPT voltage range	Volts	350 - 800	430 - 800
Operating voltage range	Volts	250 - 1000	
Maximum input voltage, open circuit	Volts	1000	
Rated input voltage	Volts	610	
Minimum input voltage	Volts	150	
Number of independent MPPT input		1/2	
Absolute maximum PV array short circuit current per MPPT	Ampere	40	
Over-voltage category		Category II	
Nominal DC input power (cos phi = 1)	Watts	21500	26500
Maximum DC input power per MPPT	Watts	12900	15900
DC connection type		Base: Spring cage clamp connector Essential & Optimum: Fuse holder	
Output (AC)			
Nominal Output Power	Watts	20000	25000
Rated Grid Voltage	Volts (L-L)	400	
AC voltage range	Volts (L-L)	319 - 478	
Grid Connection Type		3 phase 4 wire	
Frequency	Hertz	50/60	

Table A-1 System specifications (Continued)

Frequency range (adjustable)	Hertz	+/- 3	
Inverter back feed current	Ampere	0	
Short circuit current (Ph/N)	Ampere	40 A (rms) for 100 ms	
Inrush current	Ampere	60 A peak to peak for 250 μs	
Maximum output circuit current	Ampere	30	37
Maximum output over-current protection	Ampere	40 A (rms)	
Total harmonic distortion	Percentage	<3 @ rated power	
Power factor		> 0.99 @full power Adjustable: 0.8 capacitive to 0.8 inductive	
Inverter Topology		Transformer less	
Active anti-islanding method		Reactive Power Variation	
AC connection type		Spring cage clamp connector	
Protective class		Class I	
Over-voltage category		Category III	
Efficiency			
Peak	%	98.3	
European	%	98.0	
General Specifications			
Power consumption, night time	Watts	<3.0	
Enclosure Rating		IP65 (electronics)/ IP54 (rear portion)	
Cooling		Fan cooled	
Inverter weight	kg (lb)	54 (119)	
Inverter shipping weight (With Pallet)	kg (lb)	91 (200)	
Wiring Box weight	kg (lb)	15 (33)	
Wiring Box shipping weight (With Pallet)	kg (lb)	27 (59)	
Inverter dimensions (H x W x D)	mm (in)	714 x 674 x 268 (28.1 x 26.5 x 10.5)	

Table A-1 System specifications (Continued)

Wiring Box dimensions (H x W x D)	mm (in)	361 x 674 x 268 (14.2 x 26.5 x 10.5)
Inverter shipping dimensions (With Pallet) (H x W x D)	mm (in)	550 x 1200 x 800 (21.6 x 47.2 x 31.4)
Wiring Box shipping dimensions (H x W x D)	mm (in)	550 x 800 x 600 (21.6 x 31.4 x 23.6)
Ambient air temperature for operation	ºC (ºF)	-25º to 60º (-13º to 140º)
Operating altitude	m (ft)	2000 (6560)
Relative humidity%	%	4 to 100 condensing
Noise emission (at 1 m distance)	dBA	58
Pollution degree	PD3	
Storage temperature	-40°C to +60 °C (-40°F to 140 °F)	
Galvanic isolation	No isolation between grid and PV	
Features and Options		
Remote reset	Yes	
User Interface	Graphic display, button	
Communication Interface Standard	RS485 (MODBUS RTU), Ethernet / MODBUS TCP (Ethernet), USB and Dry Contact	
Monitoring	Easy to connect to third party solution, Surge Protection Device (SPD) monitoring available with device	
Regulations and Directives		
Electrical safety	CE marked for the Low Voltage Directive 2014/35/EU according to IEC/EN 62109-1/ IEC/EN 62109-2 RCM marked for AS/NZS 3100	
Grid interconnection	BDEW*, VDE0126-1-1, VDE-AR-N 4105, CEI 0-21, CEI0-16*, G59/3, UTE C15-712-1, AS4777, IEC 62116, IEC 61727, PEA & MEA for Thailand, RD1699/661/413, NRS 097-2-1	
	* Certification pending.	
Efficiency	IEC 61683	
Environmental	RoHS IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14,IEC 60068-2-21, IEC 60068-2-27, IEC 60068-2-30, IEC 60068-2-75, IEC 60068-2-78	

Table A-1 System specifications (Continued)

EMC	CE marked for the EMC directive 2014/30/EU according to: • Emissions: EN 61000-6-3 • Immunity: EN 61000-6-2	
Available product variants		
Base: AC connector and DC connector	PVSCL20E100	PVSCL25E100
Essential: Touch-safe fuse holder, DC switch and AC connector	PVSCL20E200	PVSCL25E200
Essential plus: Essential with PV connector	PVSCL20E201	PVSCL25E201
Optimum: Essential + DC SPD and AC SPD	PVSCL20E300	PVSCL25E300
Optimum plus: Optimum with PV connector	PVSCL20E301	PVSCL25E301

RCMU

The Conext™ CL transformer less inverters have an integrated electronic RCMU. This trips if the constant leakage exceeds 300 mA, or suddenly occurring residual currents of 30 mA. The integrated RCMU is sensitive to both AC and DC leakage currents.

Note: If an external RCD is used, it shall be a Type B RCD and trip current has to be at least 300 mA.

Maximum AC current during a voltage drop with LVRT function is limited as follows in Conext™ CL:

- Conext™ CL 20000E: 30 A
- Conext™ CL 25000E: 37 A

Efficiency Curves

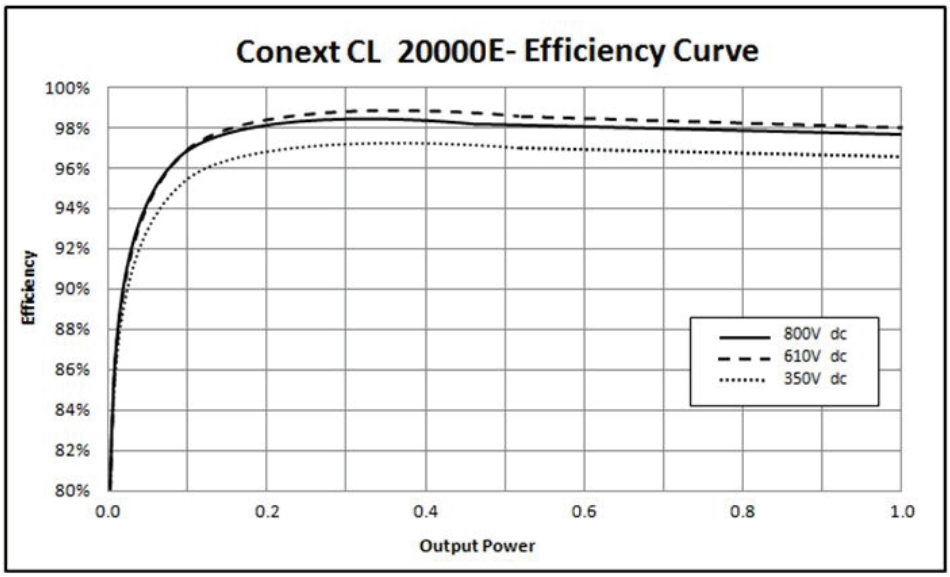


Figure A-1 Efficiency curve - 20kW

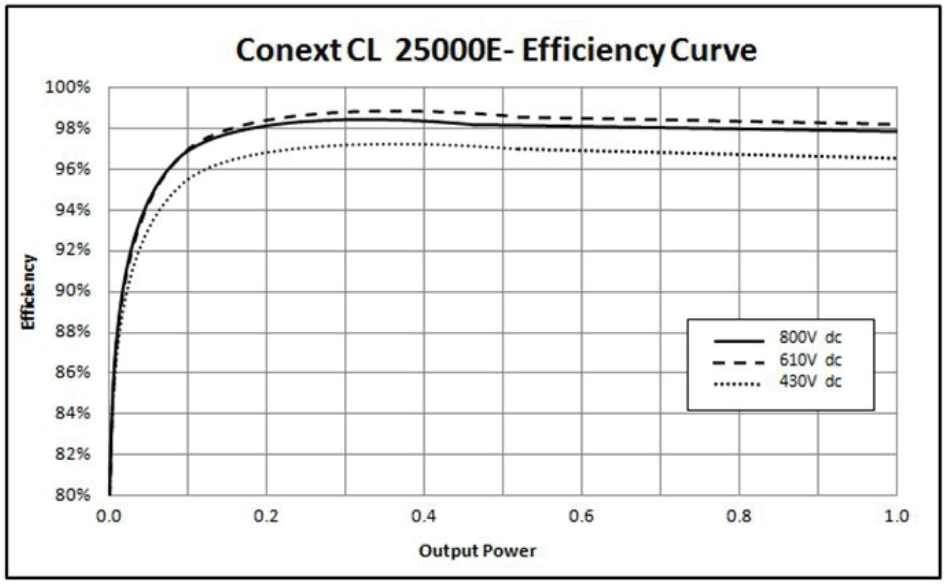


Figure A-2 Efficiency curve- 25kW

De-rating Curves

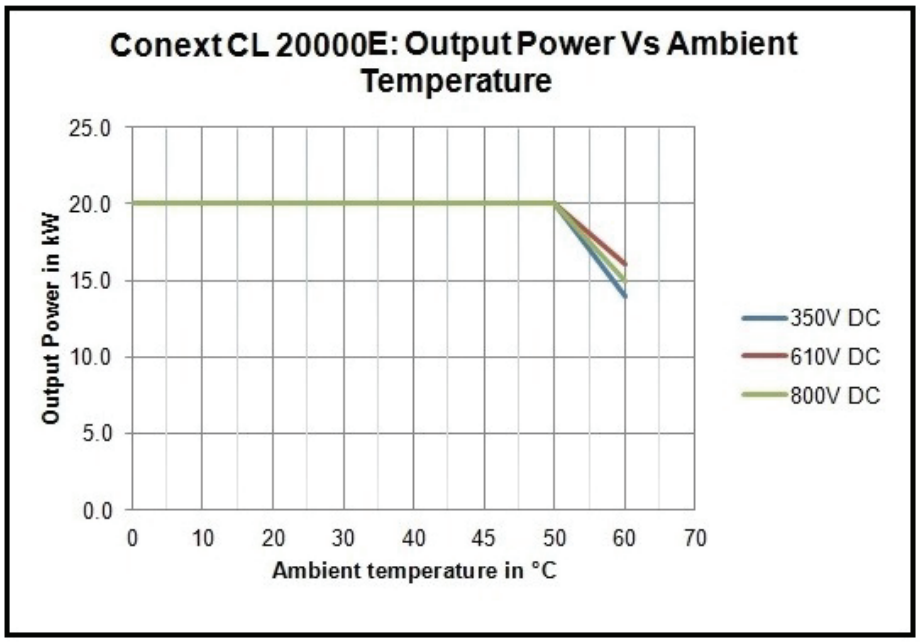


Figure A-3 Derating curve- 20kW

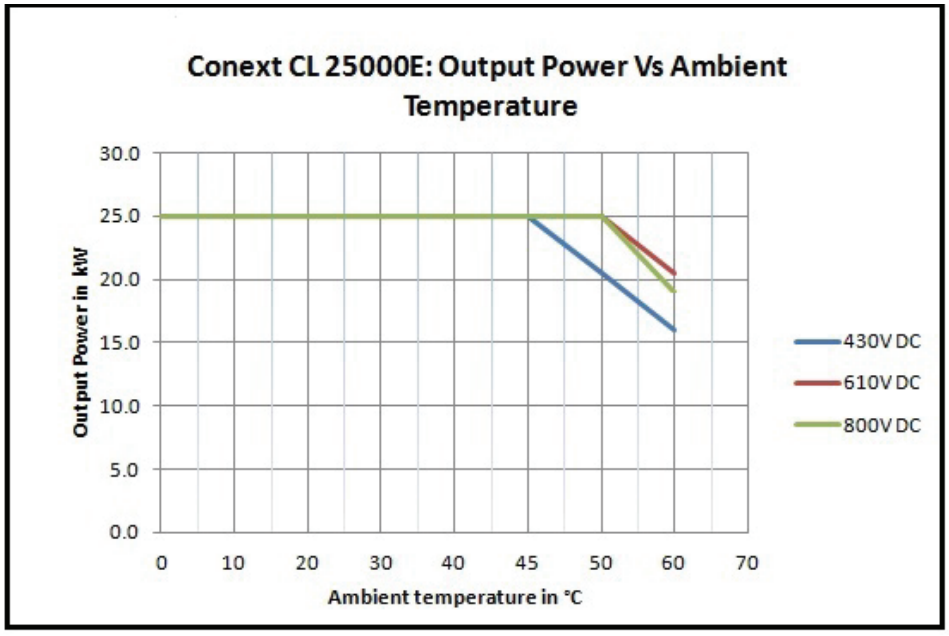


Figure A-4 Derating curve- 25kW

B Descriptions of LCD Information

Appendix B describes the information that can be displayed on the LCD of the inverter.

Description of Information Displayed on the LCD

Table B-1 describes the text that is displayed on the LCD.

For a description of error messages, see Table 4-2 on page 4–5.

Table B-1 LCD texts

LCD text	Description
Home	Main screen on the LCD
Quick View	Displays the inverter status (online, offline and reconnecting), PV is Up/No PV, Fault (or) No Fault, and Today's Energy Production along with graph
Power Meter	Displays the DC input power and AC output power menus.
Energy Log	Displays the summary of energy of days, week, month and year.
Event Log	Displays the services, errors, warnings and events occurred inside the inverter
Inverter Info	Displays the inverter information such as serial number, FGA number, wiring box and firmware version.
Settings	Displays the General Settings, Comm Settings, Install Settings, and Power Control menus
Diagnostics	Displays the Fan Control & Fan Status
Status	Displays the Temperature, SPD Status, menus
Password	Enter the password for authentication wherever it is applicable such as the Grid code/ Country selection, Install settings, Power control, Advanced temperature status and so on.
Power Meter	Home> Power Meter Displays the total DC input power screen and total AC output power screen
P (kW)	Power in kilo watts
V (v)	Voltage in volts
I(A)	Current in Ampere
PV1 - P (kW)	PV channel 1 DC input power
PV1- V(V)	PV channel 1 DC input voltage
PV1 - I(A)	PV channel 1 DC input current
PV2 - P (kW)	PV channel 2 DC input power

Table B-1 LCD texts (Continued)

LCD text	Description
PV2 - V(V)	PV channel 2 DC input voltage
PV2 - I(A)	PV channel 2 DC input current
L1 - P (kW)	3 phase Phase A - AC output power
L1 - V (v)	3 phase Phase A - AC output voltage
L1- I(A)	3 phase Phase A - AC output current
L2 - P (kW)	3 phase Phase B - AC output power
L2 - V (v)	3 phase Phase B - AC output voltage
L2 - I (A)	3 phase Phase B - AC output current
L3 - P (kW)	3 phase Phase C - AC output power
L3 - V (v)	3 phase Phase C - AC output voltage
L3 - I(A)	3 phase Phase C - AC output current
Energy Log	Home> Energy Log Displays: • The Energy production information in kWH (kilo Watt Hour) for today and life time. • The inverter online time for today and life time in Hr (hours)
Today Energy	Total power or electricity generated today from the inverter
Today Runtime	Total operation time of the inverter with energy produced
Life Energy	Total electricity generated by unit
Life Runtime	Total operation time of the inverter
Today	Total energy generated today
Yesterday	Total energy generated yesterday
Month	Total energy generated present month
Last Month	Total energy generated last month
Year	Total energy generated present year
Last year	Total energy generated last year
7 Days	Energy generated in last seven days

Table B-1 LCD texts (Continued)

LCD text	Description
Prev 7 Days	Energy generated in previous seven days
Event Log	Home> Event Log Displays the Active Services, Service Logs, Event Logs and All Logs (All up to 10 entries)
Active Services	Displays the active errors and services in the inverter.
All Logs	Displays all the errors, services, warnings and events and displays up to 10 logs
Service Log	Displays the set and clear of all errors, services warnings and events.
Event Log	Displays all the events
Service Details	Displays the detailed description of a service along with date and time
Event Details	Displays the detailed description of an event along with date and time
Log Details	Displays the detailed description of Log along with the date and time on the inverter
Inverter Info	Home> Inverter Info Displays the inverter information such as inverter details, wiring box details and firmware version
Inv.S.No.	Inverter serial number
Inv.FGA	Inverter FGA number
W.box.FGA	Wiring box FGA number
W.box.S.No. (optional)	Wiring box serial number
COMM APPL	Communication application firmware version number
COMM BOOT	Communication boot loader firmware version number
CTRL DCAC	AC processor application firmware version number
CTRL DCDC	DC processor application firmware version number
General Settings	Home> Settings> General Settings Displays the settings of name, language, date and time, contrast, back light and back light time out
Name	Name given by user/installer for the inverter identification

Table B-1 LCD texts (Continued)

LCD text	Description
Language	View/set language for display
Date & Time	View/ set date, time zone and time
Contrast	View/set LCD contrast (range 43- 65)
Backlight	View/set LCD Backlight brightness (range 0-10)
Backlight timeout(s)	View/set LCD backlight ON timeout in seconds (range 0-999)
Network settings	Home> Settings> Comm Settings> Network Settings Network related settings like IP-Address, Net mask, Gateway and DHCP
IP Address	View/set inverter IP address
Gateway	View/set inverter network gateway
Netmask	View/set inverter network mask
DHCP	View/set DHCP Enable(1)/ Disable(0)
Modbus settings	Home> Settings> Comm Settings> Modbus Settings Configure the Modbus parameters
Baud rate	View/set the inverter to operate at different Modbus Baud rates
Modbus Address	View/set Modbus address or slave ID, default set to 10
TCP port	View/set TCP port for communication, Default 502
Install settings	Install settings are settings related to PV insulation, DC - injection, RCMU enable, reset factory and Multifunction relay
Select Country	Lets you to select country/ grid setting, displays the selected settings and lets you to change the settings, with in predefined grid code
Grid setting	Displays the grid related parameters and predefined values of the selected grid
PV Insulation	Displays the PV insulation menu
Enable	PV insulation check enable(1)/ disable(0)
Thresh Resist (kohm)	PV insulation resistance value threshold in Kilo Ohms
RCMU Enable	RCMU enable (1)/ disable (0)
Factory Default	Restores all the default values

Table B-1 LCD texts (Continued)

LCD text	Description
Revert To FPU	Select this option and restart the inverter to reset to the first time power up configuration settings
Wiring Box selection	Displays the different wiring box options to configure as per part number
Multi function relay	Displays the Multiple Relay settings with respect to either of temperature, power, external load and fault limits
MPPT Settings	View/ set MPPT configuration (single/dual)
Custom	Customise the existing grid settings or new grid code settings
Power control	Home> Settings> Power Control To control the Active and Reactive power
Active power	Home> Settings> Power Control> Active Power To control the Active power or real power (KW)
Power limit	Home> Settings> Power Control> Active Power> Power limit Limits the inverter power in terms of percentage or KW level
PCT Enabled	View/ set the power control (enable/disable)
Set Point (%)	Displays the Power control in percentage with respect to the rated power
Set Point (KW)	Displays the Power control in kw (Kilo watt) with respect to the rated power
Temperature	Home > Status> Temperature> Advanced Displays the temperature values of different modules in the inverter.
DC Module 1	Displays the Boost Module 1 temperature
DC Module 2	Displays the Boost Module 2 temperature
Ambient Temp	Displays the external Ambient temperature of the inverter
AC Module A	Displays the internal Module A heatsink temperature of the inverter
AC Module B	Displays the internal Module B heatsink temperature of the inverter

Table B-1 LCD texts (Continued)

LCD text	Description
AC Module C	Displays the internal Module C heatsink temperature of the inverter
SPD Status	Home > Status> SPD Status Displays the SPD status (based on the wiring box selection)
SPD AC	Displays the AC side SPD (Surge protection Devices) monitoring status
SPD PV1	Displays the PV1 or DC1 side SPD monitoring status
SPD PV2	Displays the PV2 or DC2 side SPD monitoring status
Diagnostics	Home> Diagnostics Displays the Diagnostics menu
Fan Setting	Home > Diagnostics> Fan Control> Fan Setting
Fan Status	Displays the status of the Fan operation
Fan Control	To switch on/ off the inverter fan
Switch Off	Turns off the Fan. (All the three fans turn Off)
Fan Test	Turns On the Fan. (All the three fans turn On)
Automatic	To set the fan in automatic control, unit temperature dependant. (All three fans in automatic control)

Information About Your System

As soon as you open your Conext CL series photovoltaic grid tie inverter package, record the following information and be sure to keep your proof of purchase.

- Serial Number • _____
- Part Number • _____
- Purchased From • _____
- Purchase Date • _____

Index

O

P

R

S

T

U

V

W

Schneider Electric

http://solar.schneider-electric.com

Please contact your local Schneider Electric Sales Representative or visit our website at:
http://solar.schneider-electric.com/tech-support

990-9687C-001 Rev 04

Printed in India