CSI GRID-TIED PV INVERTER (75-110)KW
INSTALLATION AND OPERATION MANUAL

CSI-75K-T400 | CSI-80K-T400 | CSI-100K-T500 | CSI-110K-T540
1. Introduction

1.1 Product Description
Canadian Solar Three phase Inverters covert DC power from the photovoltaic (PV) array into alternating current (AC) power that can satisfy local loads as well as feed the power distribution grid.
This manual covers the three phase inverter model listed below:
CSI-75K-T400GL02-E, CSI-80K-T400GL02-E, CSI-100K-T500GL02-E, CSI-110K-T540GL02-E

1.2 Unpacking and storage
The inverter ships with all accessories in one carton.
When unpacking, please verify all the parts listed below are included:

Inverter packing list

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inverter</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mounting Bracket</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fastening screw</td>
<td>2</td>
<td>Hexagon bolt M6*12</td>
</tr>
<tr>
<td>4</td>
<td>DC connector</td>
<td>20</td>
<td>18 for (75-80)K</td>
</tr>
<tr>
<td>5</td>
<td>User manual</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
1. Introduction

1.2.1 Storage
If the inverter is not installed immediately, storage instructions and environmental conditions are below:

- Use the original box to repackage the inverter, seal with adhesive tape with the desiccant inside the box.
- Store the inverter in a clean and dry place, free of dust and dirt. The storage temperature must be between -40 - +70°C and humidity should be between 0 to 100%, non-condensing.
- Do not stack more than two (2) inverters high on a single pallet. Do not stack more than 2 pallets high.
- Keep the box(es) away from corrosive materials to avoid damage to the inverter enclosure.
- Inspect the packaging regularly. If packing is damaged (wet, pest damages, etc.), repackage the inverter immediately.
- Store inverters on a flat, hard surface - not inclined or upside down.
- After 100 days of storage, the inverter and carton must be inspected for physical damage before installing. If stored for more than 1 year, the inverter needs to be fully examined and tested by qualified service or electrical personnel before using.
- Restarting after a long period of non-use requires the equipment be inspected and, in some cases, the removal of oxidation and dust that has settled inside the equipment will be required.

2. Safety Instructions

2.1 Safety symbols
Safety symbols used in this manual, which highlight potential safety risks and important safety information, are listed below:

- **WARNING**
  Symbol indicates important safety instructions, which if not correctly followed, could result in serious injury or death.

- **NOTE**
  Symbol indicates important safety instructions, which if not correctly followed, could result in damage to or the destruction of the inverter.

- **CAUTION, RISK OF ELECTRIC SHOCK**
  Symbol indicates important safety instructions, which if not correctly followed, could result in electric shock

- **CAUTION, HOT SURFACE**
  Symbol indicates safety instructions, which if not correctly followed, could result in burns.

2.2 General safety instructions

- **WARNING**
  Do not connect PV array positive (+) or negative (-) to ground – doing so could cause serious damage to the inverter.

- **WARNING**
  Electrical installations must be done in accordance with local and national electrical safety standards.

- **WARNING**
  To reduce the risk of fire, branch circuit over-current protective devices (OCPD) are required for circuits connected to the Inverter.

- **CAUTION**
  The PV array (solar panels) supplies a DC voltage when exposed to light.
2. Safety Instructions

2.3 Notice for use
The inverter has been constructed according to applicable safety and technical guidelines. Use the inverter in installations that meet the following requirements ONLY:
1. The inverter must be permanently installed.
2. The electrical installation must meet all the applicable regulations and standards.
3. The inverter must be installed according to the instructions stated in this manual.
4. The system design must meet inverter specifications.

To start-up the inverter, the Grid Supply Main Switch (AC) must be turned on, BEFORE the DC Switch is turned on. To stop the inverter, the Grid Supply Main Switch (AC) must be turned off before the DC Switch is turned off.

5. The product is intended for use in industrial environments.

2.4 Protection Circuitry and Controls
To meet relevant codes and standards, the Canadian Solar three phase inverter line is equipped with protective circuitry and controls.

Anti-Islanding Protection:
Islanding is a condition where the inverter continues to produce power even when the grid is not present. Circuitry, along with firmware, has been designed to determine if the grid is present by adjusting the output frequency of the inverter. In the case of a 60Hz resonant system where the inverter is partially isolated from the grid, the inverter programming can detect if there is a resonant condition or if the grid is actually present. It can also differentiate between inverters operating in parallel and the grid.

3. Installation

3.1 Environmental considerations
3.1.1 Select a location for the inverter
When selecting a location for the inverter, consider the following:

- The temperature of the inverter heat-sink can reach 75 °C.
- The inverter is designed to work in an ambient temperature range between -25 to 60 °C.
- If multiple inverters are installed on site, a minimum clearance of 500mm should be kept between each inverter and all other mounted equipment. The bottom of the inverter should be at least 500 mm above the ground or floor (see Figure 3.1).
- The LED status indicator lights and the LCD located on the inverter's front panel should not be blocked.
- Adequate ventilation must be present if the inverter is to be installed in a confined space.

![Figure 3.1 Distances required between inverters](image)

NOTE
Nothing should be stored on or placed against the inverter.
3. Installation

3.1.1 Examples of correct and incorrect installations

![Correct installations](image)

![Incorrect installations](image)

Figure 3.2 Recommended Installation locations

3.1.2 Other environmental considerations

3.1.2.1 Consult technical data
Consult the specifications section (section 9) for additional environmental conditions (protection rating, temperature, humidity, altitude, etc.).

3.1.2.2 Vertical wall installation
This model of Canadian Solar inverter should be mounted vertically (90 degrees or backwards 15 degrees).

3.1.2.3 Avoiding direct sunlight
Installation of the inverter in a location exposed to direct sunlight should be avoided. Direct exposure to sunlight could cause:
- Power output limitation (with a resulting decreased energy production by the system).
- Premature wear of the electrical/electromechanical components.
- Premature wear of the mechanical components (gaskets) and user interface.

3.1.2.4 Air circulation
Do not install in small, closed rooms where air cannot freely circulate. To prevent overheating, always ensure that the air flow around the inverter is not blocked.

3.1.2.5 Flammable substances
Do not install near flammable substances. Maintain a minimum distance of three (3) meters (10 feet) from such substances.

3.1.2.6 Living area
Do not install in a living area where the prolonged presence of people or animals is expected. Depending on where the inverter is installed (for example: the type of surface around the inverter, the general properties of the room, etc.) and the quality of the electricity supply, the sound level from the inverter can be quite high.

3.2 Product handling

Please review the instruction below for handling the inverter:
1. The red circles below denote cutouts on the product package. Push in the cutouts to form handles for moving the inverter (see Figure 3.3).

![Handles used to move the inverter](image)

2. Two people are required to remove the inverter from the shipping box. Use the handles integrated into the heat sink to remove the inverter from the carton (see Figure 3.4).
3. Installation

3.3 Mounting the Inverter

The inverter can be mounted to the wall or metal array racking. The mounting holes should be consistent with the size of the bracket or the dimensions shown in Figure 3.5.

![Figure 3.4 Inverter handles](image)

**WARNING**

Due to the weight of the inverter, injuries could occur when incorrectly lifting and mounting the inverter. When mounting the inverter, take the weight of the inverter into consideration. Use a suitable lifting technique when mounting.

3.3.1 Wall mounting

Refer to figure 3.6 and figure 3.7 Inverter shall be mounted vertically.
The steps to mount the inverter are listed below.

1. Refer to Figure 3.6, drill holes for mounting screws based on the hole diameter of bracket using a precision drill keeping the drill perpendicular to the wall. Max depth is 90 mm.
2. Make sure the bracket is horizontal. And the mounting holes (in Figure 3.6) are marked correctly. Drill the holes into wall at your marks.
3. Use the suitable mounting screws to attach the bracket on the wall.

![Figure 3.6 Inverter wall mounting](image)

4. Lift the inverter and hang it on the bracket, and then slide down to make sure they match perfectly.

![Figure 3.7 Install the inverter](image)

5. Use screws in the packaging to fix the inverter to the mount bracket.

![Figure 3.8 Fix the inverter](image)
3. Installation

3.3.2 Rack mounting

The steps to mounted to the rack are listed below:

1. Select a location for the inverter
   - With an IP66 protection rating, the inverter can be installed both outdoors and indoors.
   - When the inverter is running, the temperature of the chassis and heat sink will be higher.
     Do not install the inverter in a location that you accidentally touch.
   - Do not install the inverter in a place where it is stored in a flammable or explosive material.

2. Installation angle
   - Please install the inverter vertically. If the inverter cannot be mounted vertically, it may be tilted backward to 15 degrees from vertical.
   - If tilted forward, it may be within 12.5mm.

   ![Correct Installation Angle](image1)
   ![Wrong Installation Angle](image2)

3. Install mounting plate
   1) Remove the bracket and fasteners from the packaging. Mark the position for hole, drilling according to the hole positions of the bracket.

   ![Mark the position for hole](image3)

   2) Drill the marked holes. It is recommended to apply anti-corrosive paint at the hole for corrosion protection.

   ![Drill hole](image4)
3. Installation

3.17.16.

3) Align the mounting plate with the holes. Insert the combination bolt (M10 X 40) through the mounting plate into the hole. Secure the bracket to the metal frame firmly with the supplied fastener. Torque the nut to 36FT-LB (35 NM).

4) Lift the inverter above the bracket and then slide down to make sure they match perfectly.

3.4 Electrical Connections

Inverter design uses PV style quick-connect terminal. The top cover needn't to be opened during DC electrical connection. The labels located at the bottom of the inverter are described below in table 3.1. All electrical connections are suitable for local and national standard.

<table>
<thead>
<tr>
<th>Parts</th>
<th>Connection</th>
<th>Cable size</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC terminal</td>
<td>PV strings</td>
<td>4 - 6 mm²</td>
<td>NA</td>
</tr>
<tr>
<td>Ground terminal</td>
<td>AC ground</td>
<td>25 - 50 mm²</td>
<td>10 - 12 N.m</td>
</tr>
<tr>
<td>Grid terminal</td>
<td>Grid</td>
<td>50 - 185 mm²</td>
<td>10 - 20 N.m</td>
</tr>
<tr>
<td>RS-485 terminal</td>
<td>Communication cable</td>
<td>0.3 - 4 mm²</td>
<td>0.6 N.m</td>
</tr>
<tr>
<td>RJ45 terminal</td>
<td>Communication cable</td>
<td>Network Cable</td>
<td>NA</td>
</tr>
<tr>
<td>COM terminal</td>
<td>Wi-Fi/Cellular stick</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DC surge protection device</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

The electrical connection of the inverter must follow the steps listed below:
1. Switch the Grid Supply Main Switch (AC) OFF.
2. Switch the DC Isolator OFF.
3. Connect the inverter to the grid.
4. Assemble PV connector and connect to the Inverter.
3. Installation

3.4.1 Grounding

To effectively protect the inverter, two grounding methods must be performed.

Connect the AC grounding cable (Please refer to section 3.4.3)
Connect the external grounding terminal.

To connect the grounding terminal on the heat sink, please follow the steps below:

1) Prepare the grounding cable: recommend to use the outdoor copper-core cable. The grounding wire should be at least half size of the hot wires.

2) Prepare OT terminals: M10.

**Important:**
For multiple inverters in parallel, all inverters should be connected to the same ground point to eliminate the possibility of a voltage potential existing between inverter grounds.

3) Strip the ground cable insulation to a suitable length (see Figure 3.15).

**Important:**
B (insulation stripping length) is 2 mm~3 mm longer than A (OT cable terminal crimping area).

4) Insert the stripped wire into the OT terminal crimping area and use the hydraulic clamp to crimp the terminal to the wire (see Figure 3.16).

**Important:**
After crimping the terminal to the wire, inspect the connection to ensure the terminal is solidly crimped to the wire.

5) Remove the screw from the heat sink ground point.

6) Connect the grounding cable to the grounding point on the heat sink, and tighten the grounding screw, Torque is 10-12 Nm (see figure 3.17).

**Important:**
For improving anti-corrosion performance, after ground cable installed, apply silicone or paint.

4) Insert the stripped wire into the OT terminal crimping area and use the hydraulic clamp to crimp the terminal to the wire (see Figure 3.16).

**Important:**
After crimping the terminal to the wire, inspect the connection to ensure the terminal is solidly crimped to the wire.

5) Remove the screw from the heat sink ground point.

6) Connect the grounding cable to the grounding point on the heat sink, and tighten the grounding screw, Torque is 10-12 Nm (see figure 3.17).

**Important:**
For improving anti-corrosion performance, after ground cable installed, apply silicone or paint.
3. Installation

3.4.2 Connect PV side of inverter

**WARNING**
Before connecting the inverter, make sure the PV array open circuit voltage is within the limit of the inverter. Otherwise, the inverter could be damaged.

**WARNING**
DO NOT connect the PV array positive or PV array negative cable to ground. This can cause serious damage to the inverter!

**WARNING**
MAKE SURE the polarity of the PV array output conductors matches the DC- and DC+ terminal labels before connecting these conductors to the terminals of the inverter.

The steps to assemble the DC connectors are listed as follows:

1. Strip off the DC wire for about 7mm. Disassemble the connector cap nut.
2. Insert the wire into the connector cap nut and contact pin.
3. Crimp the contact pin to the wire using a proper wire crimper.
4. Insert metal connector into top of connector, and tighten nut with torque 3-4 Nm.
5. Measure PV voltage of DC input with multimeter, verify DC input cable polarity (see figure 3.22), and ensure each string voltage is in range of inverter operation. Connect DC connector with inverter until hearing a slight clicking sound indicating successful connection. (see figure 3.23)

Please see table 3.1 for acceptable wire size for DC connections. Wire must be copper only.

**Caution:**
If DC inputs are accidently reversely connected or inverter is faulty or not working properly, it is NOT allowed to turn off the DC switch as it will damage the inverter and even leads to a fire disaster. The correct actions are:

- Use a clip-on ammeter to measure the DC string current.
- If it is above 0.5 A, please wait for the solar irradiance reduces until the current decreases to below 0.5 A.
- Only after the current is below 0.5 A, you are allowed to turn off the DC switches and disconnect the PV strings.

Please note that any damages due to wrong operations are not covered in the device warranty.

Requirements for the PV modules per MPPT input:
- All PV modules must be of the same type and power rating.
- All PV modules must be aligned and tilted identically.
- The open-circuit voltage of the PV array must never exceed the maximum input voltage of the inverter. (Consider temperature coefficient of the PV modules, see Section 9 “Specifications” for input current and voltage requirements)
- Each string connected to a single MPPT must consist of the same number of series-connected PV modules.

### Table 3.1

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Traverse area (mm²)</th>
<th>Outside diameter of cable (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Recommended value</td>
</tr>
<tr>
<td>Industry generic PV cable (model: PV1-F)</td>
<td>4.0<del>6.0 (12</del>10AWG)</td>
<td>4.0 (12AWG)</td>
</tr>
</tbody>
</table>
3. Installation

3.4.2.1 DC connection high voltage danger notice

**CAUTION**
RISK OF ELECTRIC SHOCK

Do not touch an energized DC conductor. There are high voltages present when PV modules are exposed to light causing a risk of death due to an electric shock from touching a DC conductor!

Only connect the DC cables from the PV module to the inverter as described in this manual.

**CAUTION**
POTENTIAL DAMAGE TO THE INVERTER DUE TO OVERVOLTAGE

The DC input voltage of the PV modules must not exceed the maximum rating of the inverter. (see Section 9 "Specifications")

Check the polarity and the open-circuit voltage of the PV strings before connecting the DC cables to the inverter.

Confirm proper string length and voltage range before connecting DC cable to the inverter.

3.4.3 Connect grid side of inverter

**WARNING**
An over-current protection device must be used between the inverter and the grid.

1. Connect the three (3) AC conductors to the three (3) AC terminals marked “L1”, “L2” and “L3”. Refer to local code and voltage drop tables to determine the appropriate wire size and type.
2. Connect the grounding conductor to the terminal marked “PE” (protective earth, the ground terminal).

**NOTE**
Use AL-CU transfer (bi-metallic) terminal or anti-oxidant grease with aluminum cables and terminals.

Over-Current Protection Device (OCPD) for the AC side

To protect the inverter’s AC connection line, we recommend installing a device for protection against over-current and leakage, with the following characteristics noted in Table 3.2:

<table>
<thead>
<tr>
<th>Inverter</th>
<th>Rated voltage (V)</th>
<th>Rated output current (Amps)</th>
<th>Current for protection device (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSI-75K-T400GL02-E</td>
<td>220/380</td>
<td>114.0</td>
<td>150</td>
</tr>
<tr>
<td>CSI-80K-T400GL02-E</td>
<td>220/380, 230/400</td>
<td>121.6</td>
<td>150</td>
</tr>
<tr>
<td>CSI-100K-T500GL02-E</td>
<td>480</td>
<td>120.3</td>
<td>150</td>
</tr>
<tr>
<td>CSI-110K-T540GL02-E</td>
<td>540</td>
<td>117.6</td>
<td>150</td>
</tr>
</tbody>
</table>

**NOTE**
Use M10 crimp terminals to connect to the inverter AC terminals.

3.4.3.1 Connecting the inverter to the utility grid

All electrical installations must be carried out in accordance with the local standards and the National Electrical Code® ANSI/NFPA 70 or the Canadian Electrical Code® CSA C22.1. The AC and DC electric circuits are isolated from the enclosure. If required by section 250 of the National Electrical Code®, ANSI/NFPA 70, the installer is responsible for grounding the system.

The grid voltage must be within the permissible range. The exact operating range of the inverter is specified in Section 9 “Specifications”.

3.4.3.2 Wiring procedure

**CAUTION**
RISK OF ELECTRIC SHOCK. Prior to starting the wiring procedure, ensure that the three-pole circuit breaker is switched off and cannot be reconnected.

**NOTE**
Damage or destruction of the inverter’s electronic components due to moisture and dust intrusion will occur if the enclosure opening is enlarged.

**CAUTION**
Risk of fire if two conductors are connected to one terminal. If a connection of two conductors to a terminal is made, a fire can occur.

**NOTE**
NEVER CONNECT MORE THAN ONE CONDUCTOR PER TERMINAL.

**NOTE**
Use M10 crimp terminals to connect to the inverter AC terminals.
3. Installation

### Cable Specification

<table>
<thead>
<tr>
<th>Cable Specification</th>
<th>Copper-cored cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traverse cross sectional area (mm²)</td>
<td>Range 35-185</td>
</tr>
<tr>
<td></td>
<td>Recommended 70</td>
</tr>
<tr>
<td>Cable outer diameter (mm)</td>
<td>Range 38-56</td>
</tr>
<tr>
<td></td>
<td>Recommended 45</td>
</tr>
</tbody>
</table>

1) Strip the end of AC cable insulating jacket about 300 mm then strip the end of each wire.

![Figure 3.24 Strip AC cable](image)

**NOTE**
S2 (insulation stripping length) is 2 mm - 3 mm longer than S1. (OT cable terminal crimping area)

2) Strip the insulation of the wire past the cable crimping area of the OT terminal, then use a hydraulic crimp tool to crimp the terminal. The crimped portion of the terminal must be insulated with heat shrinkable tube or insulating tape.

**NOTE:**
If choosing aluminum alloy cable, you must use copper aluminum transfer terminal in order to avoid direct contact between copper bar and Aluminum alloy cable. (Please select a copper aluminum transfer terminal based on your cable specification).

![Figure 3.25 Copper aluminum transfer terminal](image)

3) Leave the AC breaker disconnected to ensure it does not close unexpectedly.

4) Remove the 4 screws on the inverter junction box and remove the junction box cover.

![Figure 3.26 Remove the junction box cover](image)

5) Insert the cable through the nut, sheath, and AC terminal cover. Connect the cable to the AC terminal block in turn, using a socket wrench. Tighten the screws on the terminal block. The torque is 10 - 20 Nm.

![Figure 3.27 wiring with Neutral](image)

![Figure 3.28 wiring without Neutral](image)
4. Communication & Monitoring

4.1 RS485 and PLC communication connection
There are 5 communication terminals on the inverters. COM1 is a 4-pin connector reserved for WiFi/Cellular datalogger. COM2 and COM3 are RS485 connection between inverters and both RJ45 and Terminal block are provided for use.

Monitoring system for multiple inverters
Multiple inverters can be monitored through RS-485 daisy chain configuration.

![Diagram of Monitoring System](image)

NOTE
One of the RS485 and PLC communication methods is available.
5. Commissioning

5.1 Selecting the appropriate grid standard

5.1.1 Verifying grid standard for country of installation

Canadian Solar inverters are used worldwide and feature preset standards for operating on any grid. Although the grid standard is set at the factory, it is essential the grid standard be verified for the country of installation before commissioning. The menu for changing the grid standard or for creating a custom standard is accessible as described in Section 6.7 and below.

**WARNING**
Failure to set the correct grid standard could result in improper operation of the inverter, inverter damage or the inverter not operating at all.

5.2 Changing the grid standard

5.2.1 Procedure to set the grid standard

**NOTE**
This operation is for service technicians only. The inverter is customized according to the local grid standard before shipping. There should be no requirement to set the standard.

**NOTE**
The “User-Def” function can only be used by the service engineer. Changing the protection level must be approved by the local utility.

1). From the main screen on the display, select ENTER. There are 4 sub-menu options, use the UP/DOWN arrows to highlight ADVANCED SETTINGS. Press enter to select. Information: See overview Menu on page 33.

2). The screen will show that a password is required. The default password is “0010”, press the DOWN key to move cursor, press the UP key to change the highlighted digit.

3). Use the UP/DOWN keys to highlight the SELECT STANDARD option. Press enter to select.

4). Select the grid standard for the country of installation.

Press the UP or DOWN key to select the standard. Press the ENTER key to confirm the setting. Press the ESC key to cancel changes and return to the previous menu.

5.3 Setting a custom grid standard

**WARNING**
- Failure to set the correct grid standard could result in improper operation of the inverter, inverter damage or the inverter not operating at all.
- Only certified personnel should set the grid standard.
- Only set the grid configuration that is approved by your location and national grid standards.

1). Please refer to section 6.7 “Advanced Settings” for procedures to create a custom grid configuration for User-Def menu option.
5. Commissioning

5.4 Preliminary checks

5.4.1 DC Connections
Verify DC connections.
1). Lightly tug on each DC cable to ensure it is fully captured in the terminal.
2). Visually check for any stray strands that may not be inserted in the terminal.
3). Check to ensure the terminal screws are the correct torque.

5.4.2 AC Connections
Verify AC connections.
1). Lightly tug on each AC cable to ensure it is fully captured in the terminal.
2). Visually check for any stray strands that may not be inserted in the terminal.
3). Check to ensure the terminal screws are the correct torque.

5.4.3 DC configuration
Verify DC configuration by noting the number of panels in a string and the string voltage.

5.4.3.1 VOC and Polarity
Measure VOC, and check string polarity. Ensure both are correct and VOC is in specification.

5.4.3.2 Leakage to ground
Measure leakage to ground to check for a DC ground fault.

5.4.4 AC configuration
Verify AC configuration.

5.4.4.1 Measure VAC and frequency
Measure VAC and verify voltage is within local grid standards.
1). Measure each phase to ground (L-G).
2). Measure phases to the other phases in pairs (L-L). PH A to PH B, PH B to PH C and PH C to PH A.
3). If the meter is equipped, measure the frequency of each phase to ground.
4). Ensure each measurement is within local grid standards and the inverter specifications as noted in Section 9 “Specifications”.

5.4.4.2 Phase rotation test
A phase rotation test is recommended to ensure the phases have been connected in the appropriate order. Canadian Solar inverters do not require a specific phase rotation connection. However, the local utility may require a specific phase rotation or a record of the phase configuration of the installation.
6. Start and Shutdown

6.1 Start-up procedure
To start-up the inverter, it is mandatory that the steps below are followed in the exact order outlined.

1). Ensure the commissioning checks in Section 5 have been performed.
2). Switch the AC switch ON.
3). Switch the DC switch ON. If the PV array (DC) voltage is higher than the inverter’s start-up voltage, the inverter will turn on. The red DC POWER LED and LCD will be continuously lit.
4). Canadian Solar inverters are powered from the DC side. When the inverter detects DC power that is within start-up and operating ranges, the inverter will turn on. After turn-on, the inverter will check internal parameters, sense and monitor AC voltage, hertz rate and the stability of the supply grid. During this period, the green OPERATION LED will flash and the LCD screen will show INITIALIZING. This tells the operator that the inverter is preparing to generate AC power.
5). After the locally mandated delay (300 seconds for IEEE-1547 compliant inverters), the inverter will start generating AC power. The green OPERATION LED will light continuously and the LCD screen will show GENERATING.

CAUTION
The inverter’s surface temperature can reach up to 75°C (167 F). To avoid risk of burns, do not touch the surface when the inverter is in the operational mode. Additionally, the inverter must be installed out of the reach of children.

6.2 Shutdown procedure
To stop the inverter, it is mandatory that the steps below are followed in the exact order outlined.

1). Switch AC switch OFF.
2). Wait approximately 30 seconds (during this time, the AC side capacitors are dissipating energy). If the inverter has DC voltage above the start-up threshold, the red POWER LED will be lit. Switch the DC switch OFF.
3). Confirm all LED’s switch OFF (~one (1) minute).

CAUTION
Although the inverter DC disconnect switch is in the OFF position and all the LED’s are OFF, operators must wait five (5) minutes after the DC power source has been disconnected before opening the inverter cabinet. DC side capacitors can take up to five (5) minutes to dissipate all stored energy.

7. Normal Operation

7.1 Main Menu
There are four submenus in the Main Menu (see Figure 7.1):

1. Information
2. Settings
3. Advanced Info.
4. Advanced Settings

7.2 Information
The Canadian Solar three Phase Inverter main menu provides access to operational data and information. The information is displayed by selecting "Information" from the menu and then by scrolling up or down.
7. Normal Operation

7.3 Settings

The following submenus are displayed when the Settings menu is selected:

1. Set Time
2. Set Address

7.3.1 Set Time

This function allows time and date setting. When this function is selected, the LCD will display a screen as shown in Figure 7.3.

Press the UP/DOWN keys to set time and data. Press the ENTER key to move from one digit to the next (from left to right). Press the ESC key to save the settings and return to the previous menu.

7.3.2 Set Address

This function is used to set the address when multi inverters are connected to three monitors. The address number can be assigned from “01” to “99” (see Figure 7.4). The default address number of Canadian Solar Three Phase Inverter is “01”.

Press the UP/DOWN keys to set the address. Press the ENTER key to save the settings. Press the ESC key to cancel the change and return to the previous menu.

Table 7.1 Information list

<table>
<thead>
<tr>
<th>Display</th>
<th>Duration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPV_Total: 1000.0V</td>
<td>10 sec</td>
<td>VPV_Total: Shows input voltage total.</td>
</tr>
<tr>
<td>IPV_Total: +99.0A</td>
<td></td>
<td>IPV_Total: Shows input current total.</td>
</tr>
<tr>
<td>V_A: 345.7V</td>
<td>10 sec</td>
<td>V_A: Shows the grid’s voltage value.</td>
</tr>
<tr>
<td>I_A: 109.0A</td>
<td></td>
<td>I_A: Shows the grid’s current value.</td>
</tr>
<tr>
<td>V_C: 345.6V</td>
<td>10 sec</td>
<td>V_C: Shows the grid’s voltage value.</td>
</tr>
<tr>
<td>I_C: 109.8A</td>
<td></td>
<td>I_C: Shows the grid’s current value.</td>
</tr>
<tr>
<td>Status: Generating</td>
<td>10 sec</td>
<td>Status: Shows instant status of the Inverter.</td>
</tr>
<tr>
<td>Power: 1488W</td>
<td></td>
<td>Power: Shows instant output power value.</td>
</tr>
<tr>
<td>Rea_Power: 000Var</td>
<td>10 sec</td>
<td>Rea_Power: Shows the reactive power of the inverter.</td>
</tr>
<tr>
<td>App_Power: VA</td>
<td></td>
<td>App_Power: Shows the apparent power of the inverter.</td>
</tr>
<tr>
<td>Grid Frequency</td>
<td>10 sec</td>
<td>F_Grid: Shows the grid’s frequency value.</td>
</tr>
<tr>
<td>F_Grid: 50.06Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Energy</td>
<td>10 sec</td>
<td>Total generated energy value.</td>
</tr>
<tr>
<td>0259458 kwh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This Month: 0123kwh</td>
<td>10 sec</td>
<td>This Month: Total energy generated this month.</td>
</tr>
<tr>
<td>Last Month: 0123kwh</td>
<td></td>
<td>Last Month: Total energy generated last month.</td>
</tr>
<tr>
<td>Today: 15.1kwh</td>
<td>10 sec</td>
<td>Today: Total energy generated today.</td>
</tr>
<tr>
<td>Yesterday: 13.5kwh</td>
<td></td>
<td>Yesterday: Total energy generated yesterday.</td>
</tr>
<tr>
<td>Inverter SN</td>
<td>10 sec</td>
<td>Display series number of the inverter.</td>
</tr>
<tr>
<td>00000000000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Mode: Volt-watt</td>
<td>10 sec</td>
<td>Work Mode: Shows current working mode.</td>
</tr>
<tr>
<td>DRM NO.: 08</td>
<td></td>
<td>DRM NO.: Shows DRM Number.</td>
</tr>
<tr>
<td>I_DC01: +05.0A</td>
<td>10 sec</td>
<td>I_DC01: Shows input 01 current value.</td>
</tr>
<tr>
<td>I_DC02: +04.9A</td>
<td></td>
<td>I_DC02: Shows input 02 current value.</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td>I_DC20: Shows input 20 current value.</td>
</tr>
</tbody>
</table>

Figure 7.2 Locks and Unlocks the Screen of LCD

(a)  (b)

Figure 7.3 Set Time

Figure 7.4 Set Address

NEXT<<ENT> OK<<ESC>
01-01-2019 16:37

Set Address: 01
7. Normal operation

7.4 Advanced Info - Technicians Only

NOTE:
To access to this area is for fully qualified and accredited technicians only. Enter menu “Advanced Info.” and “Advanced settings” (need password).

Select “Advanced Info.” from the Main Menu. The screen will require the password as below:

YES=<ENT> NO=<ESC>
Password:0000

Figure 7.5 Enter password

After enter the correct password the Main Menu will display a screen and be able to access to the following information.

1. Alarm Message
2. Running message
3. Version
4. Daily Energy
5. Monthly Energy
6. Yearly Energy
7. Daily Records
8. Communication Data
9. Warning Message

The screen can be scrolled manually by pressing the UP/DOWN keys. Pressing the ENTER key gives access to a submenu. Press the ESC key to return to the Main Menu.

7.4.1 Alarm Message
The display shows the 100 latest alarm messages (see Figure 7.6). Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ESC key to return to the previous menu.

Alm000: OV-G-V
T: 00:00 00:00 00:00

Figure 7.6 Alarm Message

7.4.2 Running Message
This function is for maintenance person to get running message such as internal temperature, Standard No.1,2,etc.

Screens can be scrolled manually by pressing the UP/DOWN keys. Press UP/DOWN key to move one date from another.

7.4.3 Version
The screen shows the model version of the inverter. And the screen will show the software version by pressing the UP and DOWN at the same time.(see Figure 7.7).

Model: 08
Software Version: D20001

Figure 7.7 Model Version and Software Version

7.4.4 Daily Energy
The function is for checking the energy generation for selected day.

YES=<ENT> NO=<ESC>
Select: 2019-01

Figure 7.8 Select date for daily energy

Press DOWN key to move the cursor to day, month and year, press UP key to change the digit. Press Enter after the date is fixed.

2019-01-01: 051.3kWh
2019-01-01: 061.5kWh

Figure 7.9 Daily energy

Press UP/DOWN key to move one date from another.

7.4.5 Monthly Energy
The function is for checking the energy generation for selected month.

YES=<ENT> NO=<ESC>
Select: 2019-01

Figure 7.10 Select month for monthly energy

Press DOWN key to move the cursor to day and month, press UP key to change the digit. Press Enter after the date is fixed.

2019-01-01: 0510kWh
2019-01-01: 0610kWh

Figure 7.11 Month energy

NOTE:
Enter menu “Advanced Info.” and “Advanced settings” (need password).

Select “Advanced Info.” from the Main Menu. The screen will require the password as below:

YES=<ENT> NO=<ESC>
Password:0000

Figure 7.5 Enter password

After enter the correct password the Main Menu will display a screen and be able to access to the following information.

1. Alarm Message
2. Running message
3. Version
4. Daily Energy
5. Monthly Energy
6. Yearly Energy
7. Daily Records
8. Communication Data
9. Warning Message

The screen can be scrolled manually by pressing the UP/DOWN keys. Pressing the ENTER key gives access to a submenu. Press the ESC key to return to the Main Menu.

7.4.1 Alarm Message
The display shows the 100 latest alarm messages (see Figure 7.6). Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ESC key to return to the previous menu.

Alm000: OV-G-V
T: 00:00 00:00 00:00

Figure 7.6 Alarm Message

7.4.2 Running Message
This function is for maintenance person to get running message such as internal temperature, Standard No.1,2,etc.

Screens can be scrolled manually by pressing the UP/DOWN keys. Press UP/DOWN key to move one date from another.
7. Normal operation

7.4.6 Yearly Energy
The function is for checking the energy generation for selected year.

![Select year for yearly energy](image1)

Press DOWN key to move the cursor to day and year, press UP key to change the digit. Press Enter after the date is fixed.

![Yearly energy](image2)

7.4.7 Daily Records
The screen shows history of changing settings. Only for maintance personnel.

7.4.8 Communication Data
The screen shows the internal data of the Inverter (see Figure 7.14), which is for service technicians only.

![Communication Data](image3)

7.4.9 Warning Message
The display shows the 100 latest warn messages (see Figure 7.15). Screens can be scrolled manually by pressing the UP/ DOWN keys. Press the ESC key to return to the previous menu.

![Warning Message](image4)

7.5 Advanced Settings - Technicians Only

**NOTE:** Access to this area is for fully qualified and accredited technicians only. Please follow 7.4 to enter password to access this menu.

Select Advanced Settings from the Main Menu to access the following options:
1. Select Standard
2. Grid ON/OFF
3. Clear Energy
4. Reset Password
5. Power Control
6. Calibrate Energy
7. Special Settings
8. STD. Mode Settings
9. Restore Settings
10. HMI Update
11. External EPM set
12. Restart HMI
13. Debug Parameter
14. DSP Update
15. Compensation Set
16. I/V Curve

7.5.1 Selecting Standard
This function is used to select the grid’s reference standard (see Figure 7.16).

![Selecting Standard](image5)

Selecting the “User-Def” menu will access to the following submenu (see Figure 7.17).

![User-Def menu](image6)

Below is the setting range for “User-Def”. Using this function, the limits can be changed manually. (These voltage values are the phase voltage)
7. Normal operation

### 7.5.4 Reset Password

This function is used to set the new password for menu “Advanced info.” and “Advanced information” (see Figure 7.19).

**Figure 7.19 Set new password**

```plaintext
YES=<ENT> NO=<ESC>
Password: 0000
```

Enter the right password before set new password. Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

### 7.5.5 Power Control

Active and reactive power can be set through power setting button. There are 5 item for this sub menu:

1. Set output power
2. Set Reactive Power
3. Out_P With Restore
4. Rea_P With Restore
5. Select CurvePF

This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

### 7.5.6 Calibrate Energy

Maintenance or replacement could clear or cause a different value of total energy. Use this function could allow user to revise the value of total energy to the same value as before. If the monitoring website is used the data will be synchronous with this setting automatically. (see Figure 7.20).

**Figure 7.20 Calibrate energy**

```plaintext
YES=<ENT> NO=<ESC>
Energy:0000000kWh
```

Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

### 7.5.2 Grid ON/OFF

This function is used to start up or stop the power generation of Canadian Solar Three Phase Inverter (see Figure 7.18).

**Figure 7.18 Set Grid ON/OFF**

Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ENTER key to save the setting. Press the ESC key to return to the previous menu.

### 7.5.3 Clear Energy

Clear Energy can reset the history yield of inverter

These two functions are applicable by maintenance personnel only, wrong operation will prevent the inverter from working properly.

### Table 7.2 Setting ranges for User-Def (L-N)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>OV-G-V1:</td>
<td>300---480V</td>
</tr>
<tr>
<td>PV-G-V1:</td>
<td>0.01---9S</td>
</tr>
<tr>
<td>OV-G-V2:</td>
<td>490V---60S</td>
</tr>
<tr>
<td>PV-G-V2:</td>
<td>0.01---9S</td>
</tr>
<tr>
<td>UN-G-V1:</td>
<td>133---336V</td>
</tr>
<tr>
<td>PV-G-V1:</td>
<td>0.01---9S</td>
</tr>
<tr>
<td>UN-G-V2:</td>
<td>132---319V</td>
</tr>
<tr>
<td>PV-G-V2:</td>
<td>0.01---9S</td>
</tr>
<tr>
<td>Startup-T</td>
<td>10-600S</td>
</tr>
<tr>
<td>Restore-T</td>
<td>10-600S</td>
</tr>
</tbody>
</table>

**NOTE**

The initial value of the User-Def standard is for reference only. It does not represent a correct value suitable for use.

**NOTE**

For different countries, the grid standard needs to be set as different according to local requirements. If there is any doubt, please consult Canadian Solar service technicians for details.

7. Normal operation
7. Normal operation

7.5.7 Special Settings
This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

7.5.8 STD Mode Settings
Selecting “STD Mode. Settings” displays the sub-menu shown below:
1. Working Mode Set
2. Power Rate Limit
3. Freq Derate Set
4. 10mins Voltage Set
5. Power Priority
6. Initial Settings
7. Voltage PCC Set
This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

7.5.9 Restore Settings
There are 5 items in initial setting submenu.
Restore setting could set all item in 7.5.7 special setting to default.
The screen shows as below:
Are you sure?
YES=<ENT> NO=<ESC>
Figure 7.21 Restore Settings
Press the Enter key to save the setting after setting grid off.
Press the ESC key to return the previous mean.

7.5.10 HMI Update
This section is applicable to maintenance personnel only.
Selecting “Updater” displays the sub-menu shown below:
HMI Current Ver.: 02
YES= <ENT> NO= <ESC>
Figure 7.22
Updater is for updating LCD firmware. Press the ENTER key to start the process.
Press the ESC key to return to the previous menu.

7.5.11 External EPM Set
This function is turned on when the EPM is external.

7.5.12 Restart HMI
The function is used for restart the HMI.
This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.
7. Normal operation

7.5.13 Debug Parameter

This section is applicable to maintenance personnel only.

Debug Parameter as shown as below:

- S16DAT1: +0000
- S16DAT2: +0000
- S16DAT3: +0000
- S16DAT4: +0000
- S16DAT5: +0000
- S16DAT6: +0000
- S16DAT7: +0000
- S16DAT8: +0000

Figure 7.24

Press the UP/DOWN keys to scroll through items. Press the ENTER key to select. Press the DOWN key to scroll and press the UP key to change the value. Press the ENTER key to save the setting. Press the ESC key to cancel changes and return to the previous menu.

7.5.14 FAN Test

This section is applicable to maintenance personnel only.

Selecting “Fan Test” displays the sub-menu shown below:

Are you sure?
YES = <ENT> NO = <ESC>

Figure 7.25

Fan Test is a factory test function. Press the ENTER key to start the test. Press the ESC key to return to the previous menu.

7.5.15 DSP Update

The function is used for update the DSP.

This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

7.5.16 Compensation Set

This function is used to calibrate inverter output energy and voltage. It will not impact the energy count for inverter with RGM (Revenue Grade Meter). Two sections are included: Power Parameter and Voltage Parameter.

The screen shows:

YES = <ENT> NO = <ESC>
Power para: 1.000

Figure 7.26 Power Rate Limit

Press the Down key to move the cursor. Press the Up key to change the digit. Please press the Enter to save the setting and press the ESC key to return to the previous menu.

This setting is used for grid operators, do not change this setting unless specifically instructed to.
7. Normal operation

7.5.17 I/V Curve
This function is used to scan the I/V characteristic curves of each PV strings.

![Set I/V Curve](image1)

**I/V Curve Scan**

7.5.17.1 Set I/V Curve
This setting can set the scanning voltage start point and the voltage interval.

![Set I/V Curve](image2)

Start_V: 850V
Interval_V: 010V

7.5.17.2 I/V Curve Scan
Press “ENT” to start the I/V curve scan.

![I/V Curve Scan](image3)

After it is completed, the screen will display “Scan OK” and then enter the following section.

![Select String No.: 01](image4)

8. Maintenance

Canadian Solar Three Phase Inverter does not require any regular maintenance. However, cleaning the dust on heat-sink will help the inverter to dissipate the heat and increase its lifetime. The dust can be removed with a soft brush.

**CAUTION:**
Do not touch the inverter’s surface when it is operating. Some parts of the inverter may be hot and cause burns. Turn off the inverter (refer to Section 6.2) and wait for a cool-down period before before any maintenance or cleaning operation.

The LCD and the LED status indicator lights can be cleaned with a damp cloth if they are too dirty to be read.

**NOTE:**
Never use any solvents, abrasives or corrosive materials to clean the inverter.

8.1 Anti-PID Function
Canadian Solar Three phase Inverters integrates optional Anti-PID module and it can recover the PID effect during night thus protect the PV system from degradation.

![PID](image5)

The integrated Anti-PID module repairs the PID effect of the PV model at night. When operating, the inverter LCD screen displays "PID-repairing" information, and the red light is on. The Anti-PID function is always ON when AC is applied.

If maintenance is required and turn off the AC switch can disable the Anti-PID function.

**WARNING:**
The PID function starts automatically. When the DC bus voltage is lower than 50Vdc, the PID module will start creating 450 Vdc between PV- and ground. No need any control or settings.
8. Maintenance

8.2 Fan Maintenance

If the fan does not work properly, the inverter will not be cooled effectively, and it may affect the effective operation of the inverter. Therefore, it is necessary to clean or replace a broken fan as follows:

1. Turn off the “Grid ON/OFF” switch on the inverter LCD.
2. Disconnect the AC power.
3. Turn the DC switch to “OFF” position.
4. Wait for 15 minutes at least.
5. Remove the 4 screws on the fan plate and pull out the fan assembly slowly.
6. Disconnect the fan connector carefully and take out the fan.
7. Clean or replace the fan. Assemble the fan on the rack.
8. Connect the electrical wire and reinstall the fan assembly. Restart the inverter.

NOTE:
If you need to maintain the inverter at night, please turn off the AC switch first, then turn off the DC switch, and wait 5 minutes before you do other operations.

The inverter is designed in accordance with the most important international grid-tied standards and safety and electromagnetic compatibility requirements. Before delivering to the customer, the inverter has been subjected to several tests to ensure its optimal operation and reliability.

In case of failure, the LCD screen will display an alarm message. In this case, the inverter may stop feeding into the grid. The failure descriptions and their corresponding alarm messages are listed in Table 9.1:

<table>
<thead>
<tr>
<th>Alarm Message</th>
<th>Failure description</th>
<th>Solution</th>
</tr>
</thead>
</table>
| No power        | Inverter no power on LCD                 | 1. Check PV input connections  
                  |                            | 2. Check DC input voltage (single phase >120V, three phase >350V)    |
|                 |                                          | 3. Check if PV+/- is reversed                                             |
| LCD show initializing all the time | Can not start-up                  | 1. Check if the connector on main board or power board are fixed.  
                  |                            | 2. Check if the DSP connector to power board are fixed.               |
| OV-G-V01/02/03/04 | Over grid voltage                   | 1. Resistant of AC cable is too high. Change bigger size grid cable  
                  |                            | 2. Adjust the protection limit if it’s allowed by electrical company. |
| UN-G-V01/02     | Under grid voltage                     | 1. Use user define function to adjust the protection limit if it’s allowed by electrical company. |
| OV-G-F01/02     | Over grid frequency                    | 1. Check connections and grid switch.  
                  |                            | 2. Check the grid voltage inside inverter terminal.                 |
| UN-G-F01/02     | Under grid frequency                   | 1. Reduce the module number in series                                   |
| G-IMP           | High grid impedance                    | 1. Check inverter inductor connection  
                  |                            | 2. Check driver connection                                             |
| NO-GRID         | No grid voltage                        | 1. Restart inverter                                                      |
| OV-DC01/02/03/04 | Over DC voltage                      | 2. Change power board                                                   |
| OV-BUS          | Over DC bus voltage                    | 1. Check inverter inductor connection  
                  |                            | 2. Check driver connection                                             |
| UN-BUS01/02     | Under DC bus voltage                   | 1. Restart inverter                                                      |
| GRID-INTF01/02  | Grid interference                      | 2. Identify and remove the string to the fault MPPT                      |
| OV-G-I          | Over grid current                      | 2. Change power board                                                   |
| IGBT-OV-I       | Over IGBT current                      | 1. Restart inverter                                                      |
| DC-INTF         | DC input overcurrent                   | 2. Change power board                                                   |
| OV-DCA-I        |                                          |                                                                          |
| IGFOL-F         | Grid current tracking fail             | 1. Restart inverter                                                      |
| IG-AD           | Grid current sampling fail             | 2. Contact installer                                                    |
| OV-TEM          | Over Temperature                       | 1. Check inverter surrounding ventilation.  
                  |                            | 2. Check if there’s sunshine direct on inverter in hot weather.       |

9. Troubleshooting
### Table 9.1 Fault message and description

<table>
<thead>
<tr>
<th>Alarm Message</th>
<th>Failure description</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>INI-FAULT</td>
<td>Initialization system fault</td>
<td>1. Restart inverter or contact installer.</td>
</tr>
<tr>
<td>DSP-B-FAULT</td>
<td>Comm. failure between main and slave DSP</td>
<td>1. Check AC and DC connection. 2. Check inverter inside cable connection.</td>
</tr>
<tr>
<td>12Power-FAULT</td>
<td>12V power supply fault</td>
<td>1. Restart inverter or contact installer.</td>
</tr>
<tr>
<td>PV ISO-PRO 01/02</td>
<td>PV isolation protection</td>
<td>1. Remove all DC input, reconnect and restart inverter one by one. 2. Identify which string cause the fault and check the isolation of the string.</td>
</tr>
<tr>
<td>ILeak-PRO 01/02/03/04</td>
<td>Leakage current protection</td>
<td>1. Check AC and DC connection. 2. Check inverter inside cable connection.</td>
</tr>
<tr>
<td>RelayChk-FAIL</td>
<td>Relay check fail</td>
<td>1. Restart inverter or contact installer.</td>
</tr>
<tr>
<td>DCinj-FAULT</td>
<td>High DC injection current</td>
<td>1. Restart inverter or connect technician.</td>
</tr>
<tr>
<td>AFCI self-detection (model with AFCI module)</td>
<td>AFCI module self-detect fault</td>
<td>1. Restart inverter or connect technician.</td>
</tr>
<tr>
<td>Arcing protection (model with AFCI module)</td>
<td>Detect arc in DC circuit</td>
<td>1. Check inverter connection whether arc exists and restart inverter.</td>
</tr>
<tr>
<td>Reve-DC</td>
<td>One of the DC string is reversely connected</td>
<td>1. Please check the inverters’ PV string polarity. If there are strings reversely connected wait for the night when the solar irradiance is low and the PV string current down below 0.5A. Turn off the two DC switches and fix the polarity issue.</td>
</tr>
<tr>
<td>Screen OFF with DC applied</td>
<td>Inverter internally damaged</td>
<td>1. Do not turn off the DC switches as it will damage the inverter. 2. Please wait for the solar irradiance reduces and confirm the string current is less than 0.5A with a clip-on ammeter and then turn off the DC switches. 3. Please note that any damages due to wrong operations are not covered in the device warranty.</td>
</tr>
</tbody>
</table>

### NOTE
If the inverter displays any alarm message as listed in Table 8.1; please turn off the inverter (refer to Section 5.2 to stop your inverter) and wait for 15 minutes before restarting it (refer to Section 5.1 to start your inverter). If the failure persists, please contact your local distributor or the service center. Please keep ready with you the following information before contacting us.

1. Serial number of Canadian Solar Three Phase Inverter;
2. The distributor/dealer of Canadian Solar Three Phase Inverter (if available);
3. Installation date.
4. The description of problem (i.e. the alarm message displayed on the LCD and the status of the LED status indicator lights. Other readings obtained from the Information submenu (refer to Section 6.2) will also be helpful.);
5. The PV array configuration (e.g. number of panels, capacity of panels, number of strings, etc.);
6. Your contact details.
### 10. Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>CSI-75K-T400GL02-E</th>
<th>CSI-80K-T400GL02-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. DC input voltage (Volts)</td>
<td>1100</td>
<td>1100</td>
</tr>
<tr>
<td>Rated DC voltage (Volts)</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Start-up voltage (Volts)</td>
<td>195</td>
<td>195</td>
</tr>
<tr>
<td>MPPT voltage range (Volts)</td>
<td>180...1000</td>
<td>180...1000</td>
</tr>
<tr>
<td>Max. input current (Amps)</td>
<td>9*26</td>
<td>9*26</td>
</tr>
<tr>
<td>Max short circuit input current (Amps)</td>
<td>9*40</td>
<td>9*40</td>
</tr>
<tr>
<td>MPPT number/Max input strings number</td>
<td>9/18</td>
<td>9/18</td>
</tr>
<tr>
<td>Rated output power (Watts)</td>
<td>75000</td>
<td>80000</td>
</tr>
<tr>
<td>Max. output power (Watts)</td>
<td>75000</td>
<td>88000</td>
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<tr>
<td>Max. apparent output power (VA)</td>
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<tr>
<td>Rated grid voltage (Volts)</td>
<td>3/N/PE~220/380</td>
<td>3/N/PE, 220/380, 230/400</td>
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<tr>
<td>Rated output current (Amps)</td>
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<tr>
<td>Power Factor (at rated output power)</td>
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<td>0.8leading~0.8lagging</td>
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<tr>
<td>THDI (at rated output power)</td>
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<td>&lt;3%</td>
</tr>
<tr>
<td>Rated grid frequency (Hertz)</td>
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<td>50/60</td>
</tr>
<tr>
<td>Max. efficiency</td>
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<tr>
<td>EU efficiency</td>
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<tr>
<td>Dimensions (W<em>H</em>D)</td>
<td>1050<em>567</em>314.5mm (with AC switch)</td>
<td>1050<em>567</em>314.5mm (with AC switch)</td>
</tr>
<tr>
<td>Weight</td>
<td>82kg</td>
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<tr>
<td>Topology</td>
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</tr>
<tr>
<td>Self consumption (night)</td>
<td>&lt; 2W (without anti-PID)</td>
<td>&lt; 2W (without anti-PID)</td>
</tr>
<tr>
<td>Operating ambient temperature range</td>
<td>-25°C...+60°C</td>
<td>-25°C...+60°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>0~100%</td>
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</tr>
<tr>
<td>Ingress protection</td>
<td>IP66</td>
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</tr>
<tr>
<td>Cooling concept</td>
<td>Intelligent redundant cooling</td>
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</tr>
<tr>
<td>Max. operation altitude</td>
<td>4000m</td>
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</tr>
<tr>
<td>DC connection</td>
<td>MC4 connector</td>
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</tr>
<tr>
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<td>OT Terminal (max 185 mm²)</td>
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</tr>
<tr>
<td>Display</td>
<td>LCD, 2×20 Z</td>
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</tr>
<tr>
<td>Communication connections</td>
<td>RS485, Optional: Wifi, GPRS, PLC</td>
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</table>
## 10. Specifications

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<thead>
<tr>
<th>Model</th>
<th>CSI-100K-T500GL02-E</th>
<th>CSI-110K-T540GL02-E</th>
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<tbody>
<tr>
<td>Max. DC input voltage (Volts)</td>
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<td>Rated DC voltage (Volts)</td>
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<td>Start-up voltage (Volts)</td>
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<tr>
<td>MPPT voltage range (Volts)</td>
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<td>180...1000</td>
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<td>Max. input current (Amps)</td>
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<td>10*26</td>
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<tr>
<td>Max short circuit input current (Amps)</td>
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<td>10/20</td>
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<tr>
<td>Rated output power (Watts)</td>
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<tr>
<td>Max. output power (Watts)</td>
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<td>Max. apparent output power (VA)</td>
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<tr>
<td>Rated grid voltage (Volts)</td>
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<td>Rated grid output current (Amps)</td>
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