

SELEC
CREST



ON GRID SOLAR INVERTER

OPERATING INSTRUCTIONS
(1.5kW / 2.5kW / 3.3kW)

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1. Manual overview

Warning



- Before using **GTI-SERIES** inverter, please read all safety and operational instructions and warnings on the unit and in this manual carefully
- **Selec Controls Pvt. Ltd.** is not liable for any damages caused by failure to observe and follow these instructions in the manual
- **Selec Controls Pvt. Ltd.** holds the rights to make future changes in this manual and accepts no responsibility to inform the users

1.1 What is inside the manual ?

- This manual contains all the technical information required for the installation, operation, maintenance and troubleshooting of the **GTI-SERIES** solar inverter
- All the important safety and operational guidelines are present in this manual
- To ensure correct and safe operation read this manual properly

1.2 Target group

- The content in this manual is meant for **qualified persons** only
- For safety reasons only a qualified person can install, operate, troubleshoot and repair this device
- Qualified person should also be familiar with local requirements, rules and regulations

NOTE

- Hereby qualified person means one who has received training or has demonstrated skills and knowledge in construction and in operation of this device

1.3 Storage of the manual

- Keep this manual at a location from where it is accessible all time in case of any emergency.

1.4 Additional information

- Please refer to **www.selec.com** for the updated version of manual

2. Product Overview

2.1 Intended use of inverter

GTI-SERIES inverter are Grid Tied Solar Inverter. When sunrays fall upon the PV array, DC power is generated by these arrays. This power is fed to the inverter as input. Inverter will convert this DC power into AC power and feed it to single phase utility grid. **GTI-SERIES** are one string inverter with one independent MPPT tracker.

Overview of complete Grid Tied PV system with **GTI-SERIES** inverter:

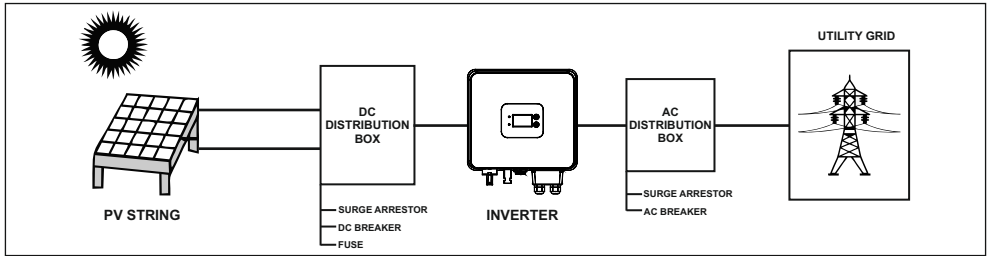
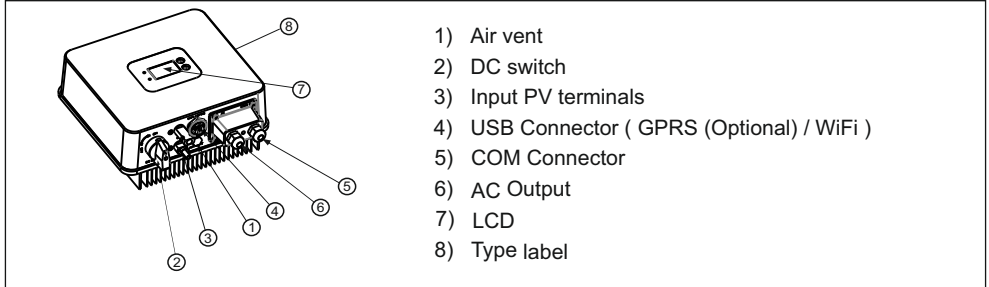


Fig 1

As shown in Fig 1, the complete system consists of PV array, DC distribution box, GTI-SERIES inverter, AC distribution box and utility grid.

2.2 Inverter overview



2.3 Weight and Dimensions

1) Weight of the Inverter is 5.2 Kilogram

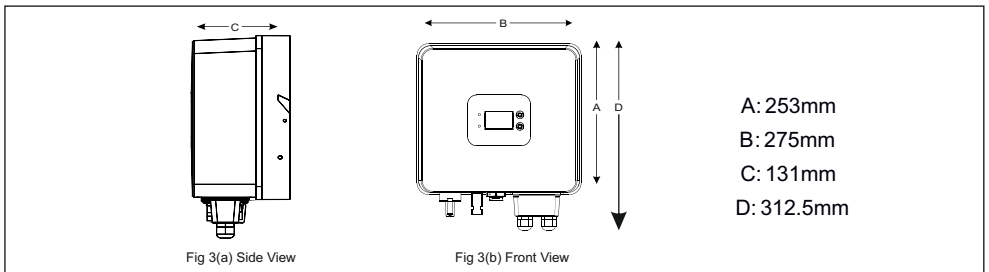


Fig 2

2.4 Type of labels


Type label is present on the right hand side of inverter. Type label has information about inverter specific characteristics, various symbols, certificates and approval.


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PV GRID INVERTER
Model : GTI003WLM1PW1

DC Input Range : 65 - 550 VDC
 Max. DC Voltage : 550 VDC
 MPPT Voltage Range : 65 - 550 V
 Max. Input Current : 12A
 Isc PV (Absolute maximum)
 DC per MPPT : 16A

AC Output : 240 VAC, 50Hz
 1P/2W/PE, cosφ 0.8lag~0.8lead
 Max. Output current : 16 A
 Apparent Power :
 3.3kVA nom, 3.3kVA max

Safety Level : Class 1
 Ambient Temp : -25°C...+60°C

IP65 




Made In India
 Mfg. by: Selec Controls Pvt. Ltd.
 EL-27/1 EL-27/1 PT, EL-27/2 EL-27/3,
 Electronic Zone, TTC Industrial Area,
 MIDC Mahape, Navi Mumbai, Thane
 Maharashtra 400710


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PV GRID INVERTER
Model : GTI003WLM1PW2

DC Input Range : 65 - 550 VDC
 Max. DC Voltage : 550 VDC
 MPPT Voltage Range : 65 - 550 V
 Max. Input Current : 17A
 Isc PV (Absolute maximum)
 DC per MPPT : 20A

AC Output : 240 VAC, 50Hz
 1P/2W/PE, cosφ 0.8lag~0.8lead
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PV GRID INVERTER
Model : GTI003WLM1PW3

DC Input Range : 65 - 550 VDC
 Max. DC Voltage : 550 VDC
 MPPT Voltage Range : 65 - 550 V
 Max. Input Current : 20A
 Isc PV (Absolute maximum)
 DC per MPPT : 30A

AC Output : 240 VAC, 50Hz
 1P/2W/PE, cosφ 0.8lag~0.8lead
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 MPPT Voltage Range : 65 - 550 V
 Max. Input Current : 12A
 Isc PV (Absolute maximum)
 DC per MPPT : 16A

AC Output : 240 VAC, 50Hz
 1P/2W/PE, cosφ 0.8lag-0.8lead
 Max. Output current : 11.9 A
 Apparent Power :
 2.5kVA nom, 2.5kVA max

Safety Level : Class 1
 Ambient Temp : -25°C...+60°C



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Safety Level : Class 1
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 Maharashtra 400710

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PV GRID INVERTER

Model : GTI001WLM1PW1

DC Input Range : 65 - 550 VDC
 Max. DC Voltage : 550 VDC
 MPPT Voltage Range : 65 - 550 V
 Max. Input Current : 12A
 Isc PV (Absolute maximum)
 DC per MPPT : 16A

AC Output : 240 VAC, 50Hz
 1P/2W/PE, cosφ 0.8lag~0.8lead
 Max. Output current : 7.1 A
 Apparent Power :
 1.5kVA nom, 1.5kVA max

Safety Level : Class 1
 Ambient Temp : -25°C...+60°C



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2.5 Symbols on the Inverter









Symbol	Description
	Be careful of high voltages
	Risk of danger. Failure to observe safety information in manual may result in serious injury or death
	Residual voltage Hazard. Please wait for 5 minutes before opening to ensure the capacitors are completely discharged
	Risk of burns due to hot surfaces
	Read the manual before installing GTI-SERIES Inverters
	Do not dispose this inverter with household waste
	CE mark. The inverter complies with the requirements of applicable EC guidelines
	Protective earth terminal
IP65	GTI-SERIES inverter complies with IP65 norms

Table 1

Indications on front side of inverter:

Indication	Description
Red LED	Alarm status
Green LED	Status of grid connection

Table 2

2.6 Transportation

Our inverters go out of the factory in proper electrical and mechanical condition after thorough testing and inspection. To ensure safe and careful transportation special packaging is used. If you find packing problems or find any visible damage, please immediately contact your dealer or Selec Controls Pvt Ltd. Transport of the equipment, especially by road, must be carried out with suitable means for protecting the components, in particular the electronic components from violent shocks, humidity, vibration, etc.

2.7 Storage

While not in load condition, Inverter should be stored in clean, dry and covered space in original packaging.

3. Safety instructions

This chapter contains safety instructions and guidelines that must be followed at all times while working on or with the product. To prevent personal injury, property damage and to ensure long-term operation of the product, read this section carefully and observe all safety information at all times.

3.1 Safety during assembly

Warning



- The GTI-SERIES inverter should be operated with permanent connection with utility grid and not recommended for mobile use.
- Unintended use of this inverter is sole risk of the operator and manufacturer/supplier is not responsible for any damage caused by such use.
- For safety reasons only a qualified person can install, operate, troubleshoot and repair this device. Qualified person should also be familiar with local requirements, rules and regulations.

4. Unpacking and accessories

4.1 Unpacking

During transportation unpredictable damages may occur with inverter unit and the accessories. On receiving the unit please do thorough inspection for any visible external damages on package. If any external visible damage is found, do not unpack inverter unit and contact the dealer as soon as possible.

4.2 Accessories

Once you unpack the unit, please ensure that all accessories are present in the box and undamaged. Please contact your dealer if anything is missing or damaged. All the accessories present in the box are listed as follow in Fig 4 & Table 3.

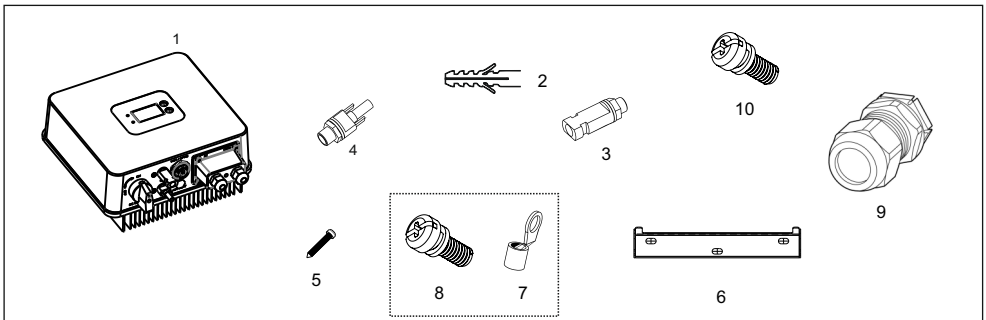


Fig 4

Item	Quantity	Description
1	1	Inverter
2	3	Rawal plug
3	1	PV Male connector
4	1	PV Female connector
5	3	Self tapping screw
6	1	Wall mounting plate
7	1	Ring type lug
8	1	M5 x 8mm philips head screw
9	2	Cable gland
10	2	Inverter mounting screw

Table 3

5. Installation

This chapter guide installer how to install GTI-SERIES inverter.

5.1 Safety note before installation:

Caution



- Weight of GTI-SERIES Inverter is 5.2 kg. Hold inverter tightly before mounting & moving
- Mounting surface should be rigid & able to handle weight of GTI-SERIES inverter

Warning



- Avoid installing GTI-SERIES inverter near or on flammable materials



- Hot surface of GTI-SERIES Inverter may create a burn hazard to a person who is touching hot surface, to avoid this mount inverter at appropriate height
- Input to this inverter is DC (Direct current) which is a PV array generator. Do not connect any other source to it
- Output of inverter is AC (Alternating current) which is connected to a utility grid. Power generated from inverter is delivered to a utility grid hence it should not be connected any other AC source or generator
- Make sure DC switch is at OFF position. If it is on ON position switch it to OFF position

5.2 Installation of inverter

GTI-SERIES inverter is developed for use in an outdoor location with IP 65 protection but avoid direct contact of inverter with sunlight, rainfall and snowfall. Fig 5 shows ideal locations for installation of inverter.

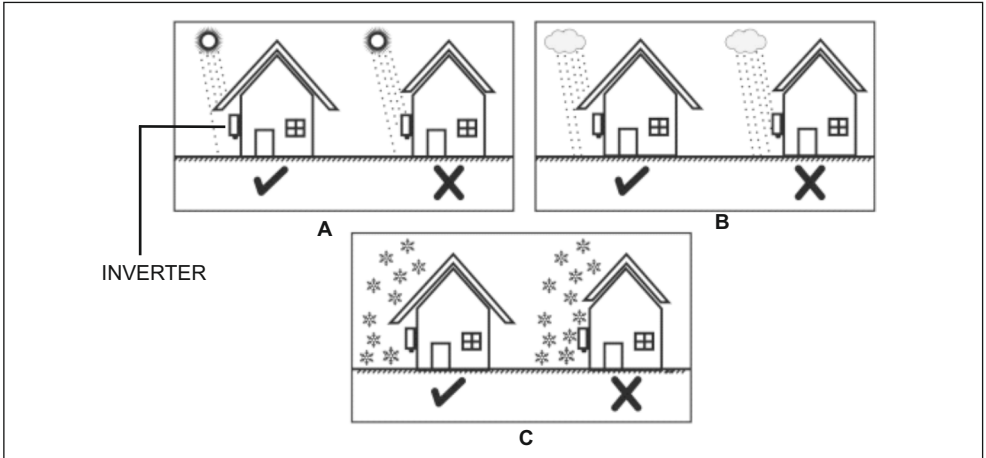


Fig 5

Ideal installing position shown in fig 6. -

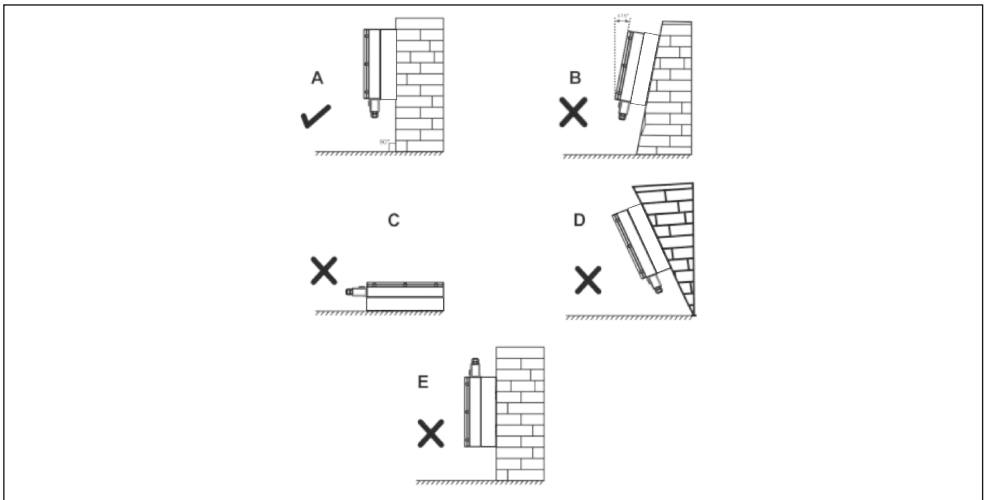


Fig 6

NOTICE

- Mount the GTI-SERIES inverter on rigid, strong wall in such way that it can handle weight of inverter.
- Mount inverter on such a height that commissioning, decommissioning, turning ON and turning OFF is easily possible.

5.2.1 Clearance for installation

Install inverter on wall with minimum clearance as shown in fig 7.

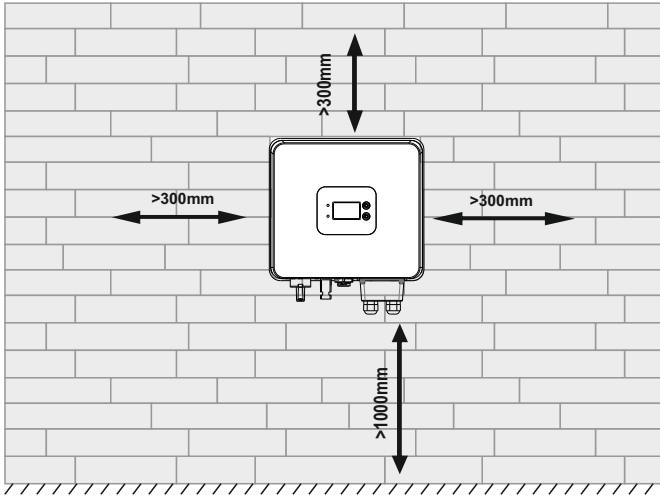


Fig 7

To install more than one inverter in series follow fig 8. for minimum clearance. This clearance should be provided for easy installation, removal & heat dissipation of GTI-SERIES inverter.

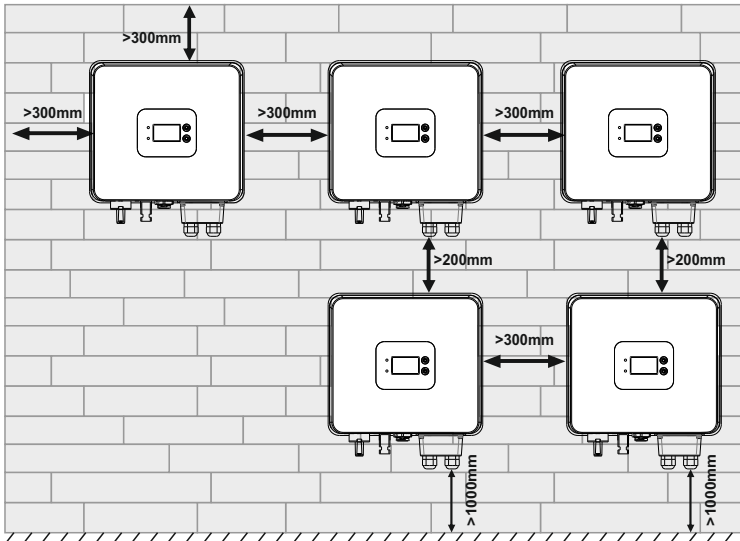


Fig 8

5.2.2 Mounting inverter on wall

Steps to mount inverter with bracket

Step1 : Drill three holes on wall at distance of inverter mounting position as shown in fig.9 & insert self tapping screw in holes.

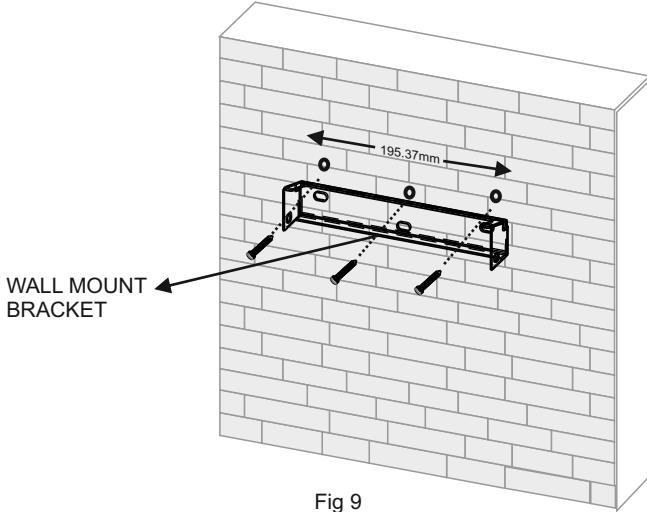


Fig 9

Step2 : Mount inverter on Mounting Bracket with help of at least two people. Tighten the bolt and ensure inverter is properly fitted on bolt as per fig 10.

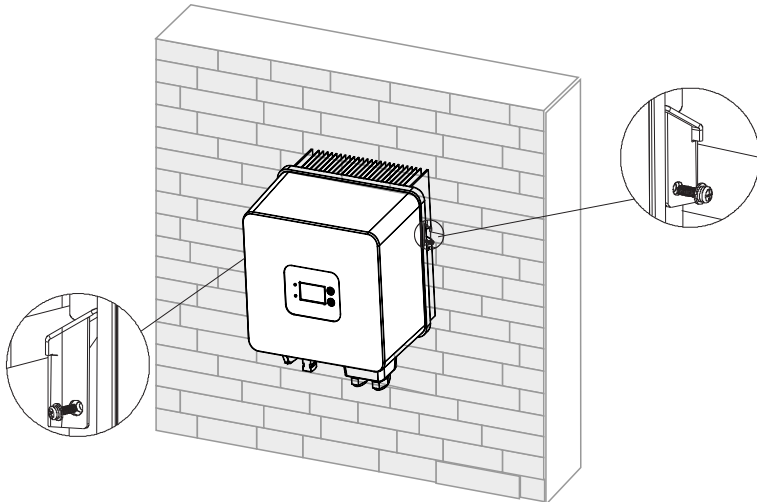


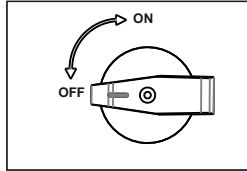
Fig 10

6. Electrical connections

This section helps installer, how to do electrical connection to GTI-SERIES inverter. Electrical connection has to be performed by qualified and authorised person only.

Caution

Check if DC Disconnect switch is in OFF position as shown in following Fig 11.



Warning

- Whenever a PV array is exposed to sunlight it supplies DC Voltage. Shock hazard may occurs if terminals are open. Cover PV array with opaque material before commencing any wiring.
- Ensure string's open circuit voltage should be less than inverter's maximum input voltage. Applying more voltage can damage inverter.
- **Do not disconnect AC & DC cables under load condition.**

6.1 DC Connection to Inverter

Model	Current Rating	Wire Size
GTI003WLM1PW1	13A	2.5 sq.mm
GTI002WLM1PW1	13A	2.5 sq.mm
GTI001WLM1PW1	13A	2.5 sq.mm
GTI003WLM1PNS1	13A	2.5 sq.mm
GTI002WLM1PNS1	13A	2.5 sq.mm
GTI001WLM1PNS1	13A	2.5 sq.mm
GTI003WLM1PW2	17A	4 sq.mm
GTI002WLM1PW2	17A	4 sq.mm
GTI001WLM1PW2	17A	4 sq.mm
GTI003WLM1PNS2	17A	4 sq.mm
GTI002WLM1PNS2	17A	4 sq.mm
GTI001WLM1PNS2	17A	4 sq.mm
GTI003WLM1PW3	20A	4 sq.mm
GTI002WLM1PW3	20A	4 sq.mm
GTI001WLM1PW3	20A	4 sq.mm
GTI003WLM1PNS3	20A	4 sq.mm
GTI002WLM1PNS3	20A	4 sq.mm
GTI001WLM1PNS3	20A	4 sq.mm

- 1) Do not connect PV array positive terminal or negative terminal to the grounding of system.
- 2) Make sure PV connector's (Male & female) polarity is proper.
- 3) Connect PV connectors as shown in fig.13
- 4) Make sure connectors to Inverter DC terminal are connected properly.

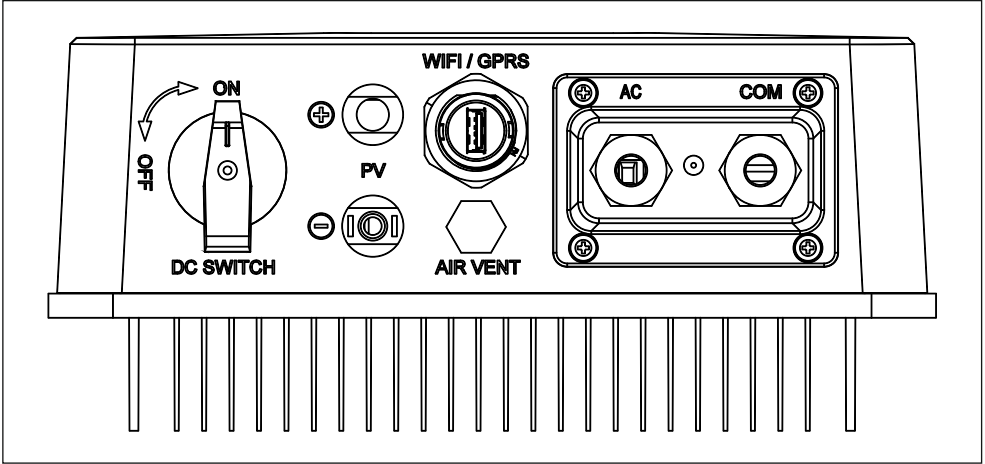


Fig 12

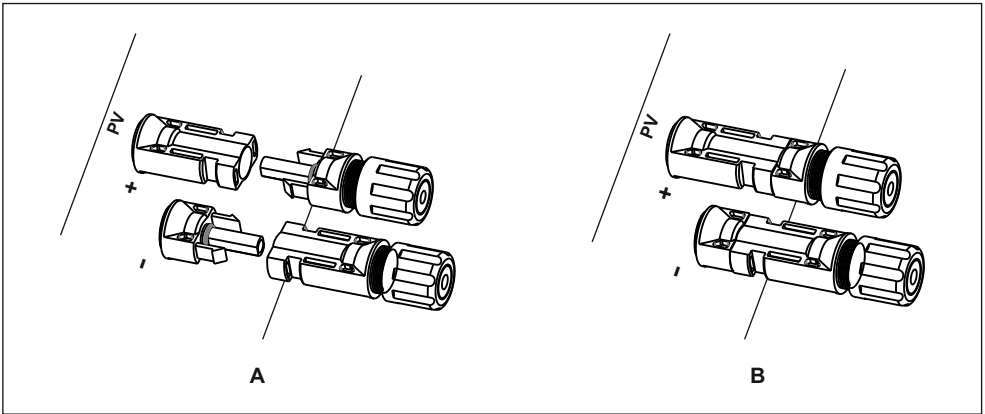


Fig 13

6.2 AC Connections

Caution



- For the purpose of over current protection use circuit breaker between inverter & utility grid. Use 20A / 240Vac rated AC breaker
- Do not connect any load between inverter & Grid side circuit breaker
- Before starting connection make sure that circuit breaker is OFF

6.2.1 Steps for AC wiring

Note - This inverter has in-build residual current monitoring device. If system installer wants to use other residual current monitoring device then must use device which triggers in the event of residual current of 300mA or more.

Model	Current Rating	Wire Size
GTI003WLM1PW1	16A	2.5 sq.mm
GTI002WLM1PW1	11.9A	2.5 sq.mm
GTI001WLM1PW1	7.1A	2.5 sq.mm
GTI003WLM1PNS1	16A	2.5 sq.mm
GTI002WLM1PNS1	11.9A	2.5 sq.mm
GTI001WLM1PNS1	7.1A	2.5 sq.mm
GTI003WLM1PW2	16A	2.5 sq.mm
GTI002WLM1PW2	11.9A	2.5 sq.mm
GTI001WLM1PW2	7.1A	2.5 sq.mm
GTI003WLM1PNS2	16A	2.5 sq.mm
GTI002WLM1PNS2	11.9A	2.5 sq.mm
GTI001WLM1PNS2	7.1A	2.5 sq.mm
GTI003WLM1PW3	16A	2.5 sq.mm
GTI002WLM1PW3	11.9A	2.5 sq.mm
GTI001WLM1PW3	7.1A	2.5 sq.mm
GTI003WLM1PNS3	16A	2.5 sq.mm
GTI002WLM1PNS3	11.9A	2.5 sq.mm
GTI001WLM1PNS3	7.1A	2.5 sq.mm

- 1) Remove Terminal Cover and loosen AC gland
- 2) Use 3 core AC cables of 2.5 sq.mm size for AC connection.
- 3) Strip AC wires and put lugs using crimping tool, it will ensure no wire strands are open & avoid accidental shorting of two wire.
- 4) Put these wires in AC Connector & Screw it tightly, With help of No : 901 Screw driver.
- 5) Fig 14 shows labels for AC connections.
- 6) Insert 3 core wire through AC gland and cover as shown in fig 14.
- 7) Make connections as shown in Fig 14.
- 8) Tighten the Terminal cover and AC gland properly as shown in fig 14.

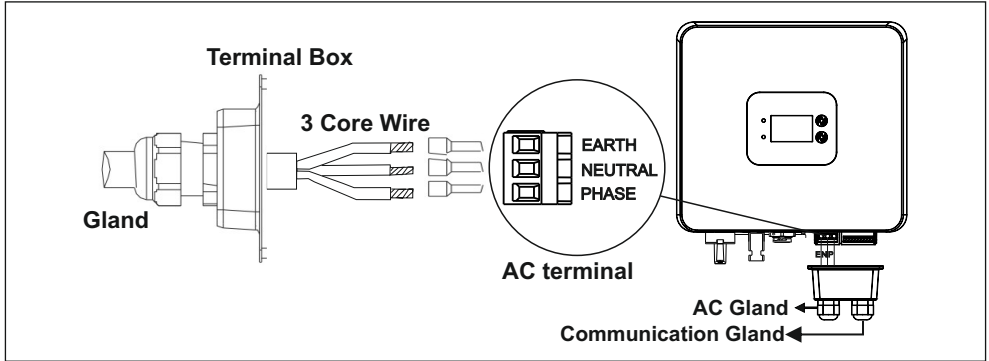


Fig 14

6.3 Communication module

6.3.1 Communication connection type 1: Screw type

GTI-SERIES inverter's Communication terminal consist of RS-485, External CT and smart meter connections as shown in fig. 15. Table 4 explains signal connection on communication terminal.

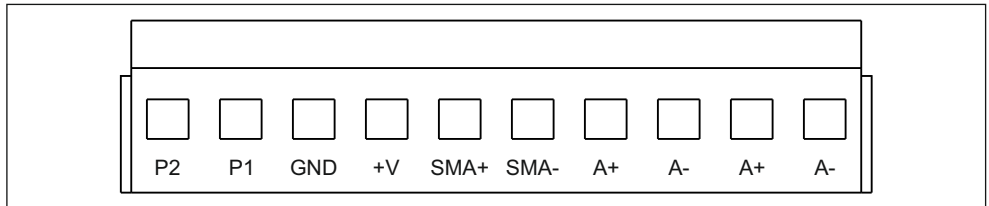


Fig 15

6.3.1.1 Connecting signal cable

PIN NO.	Definition	
1	P2	Signal for export limitation
2	P1	
3	GND	Supply GND
4	+V	+12V / +5V
5	SMA+	RS485 Smart meter communication
6	SMA-	
7	A+	RS485 external communication
8	A-	
9	A+	
10	A-	

Table 4

6.3.2 Communication connection type 2: Push button type

GTI-SERIES inverter's Communication terminal consist of RS-485, External CT and smart meter connections as shown in fig. 15.1. Table 4.1 explains signal connection on communication terminal.

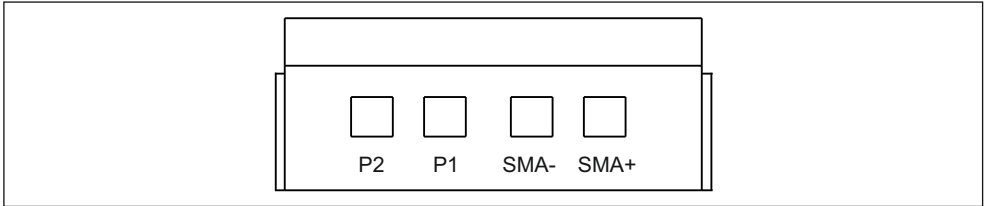


Fig 15.1

6.3.2.1 Connecting signal cable

PIN NO.	Definition	
1	P2	Signal for export limitation
2	P1	
3	SMA-	RS485 smart meter communication
4	SMA+	

Table 4.1

7. Procedure

7.1 Installation connector and it's connection

7.1.1 (A) Steps of communication wiring : Screw type

(A) specify screw type

Step 1 Remove the terminal cover and loosen communication gland

Step 2 Strip wires and insert them through communication gland

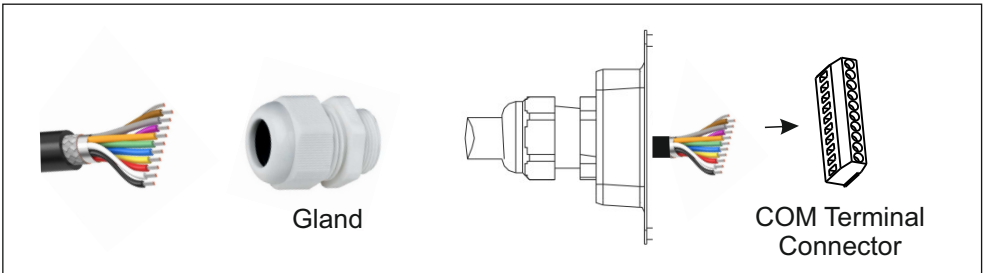


Fig 16

Step 3 Tighten wires in communication terminal With help of No : 933 Screw driver.

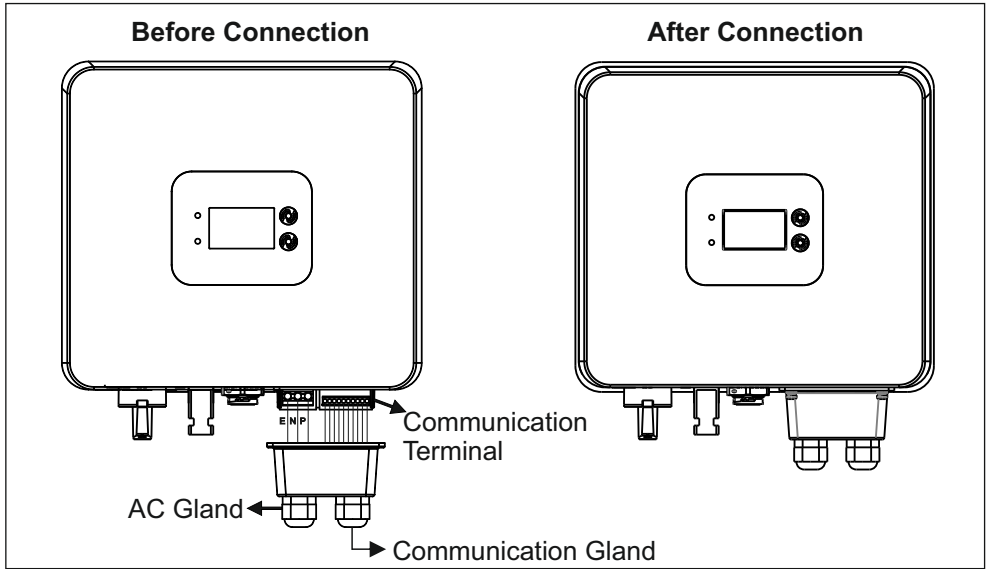


Fig 16.1

Step 4 Tighten gland and terminal cover

(B) specify push type

7.1.1 (B) Steps of communication wiring : Push button type

Step 1 Remove the terminal cover and loosen communication gland

Step 2 Strip wires and insert them through communication gland

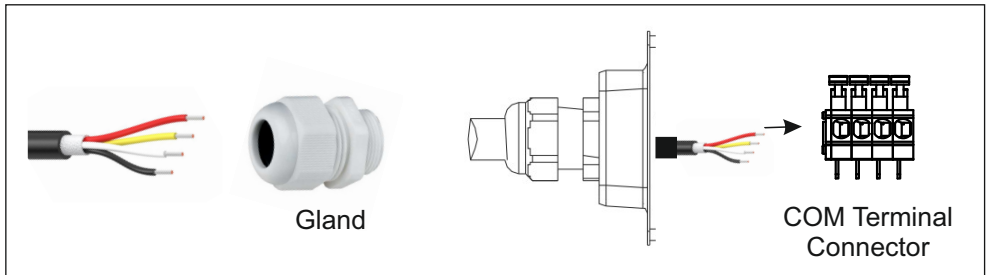


Fig 17

Step 3 Tighten wires in communication terminal With help of No : 933 Screw driver.

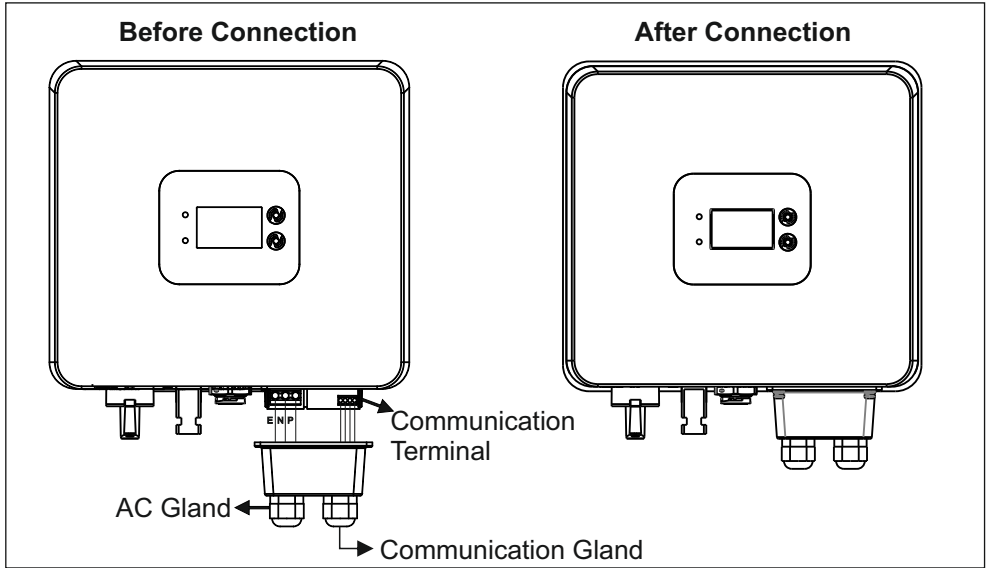


Fig 17.1

Step 4 Tighten gland and terminal cover.

7.1.2 AC Grounding

Grid's earth terminal must be connected to inverter's protective earth (PE) terminal as shown in Fig 16.

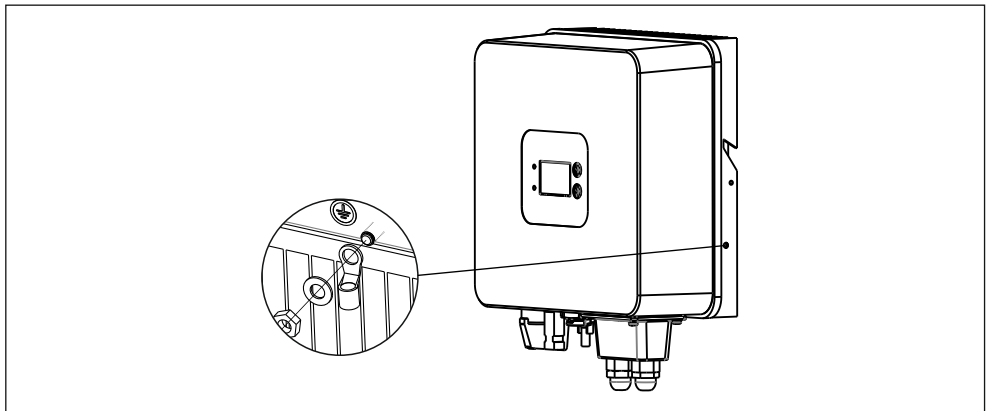


Fig 18

7.2 LCD Operating Steps

7.2.1 LCD KEY ANNOTATIONS

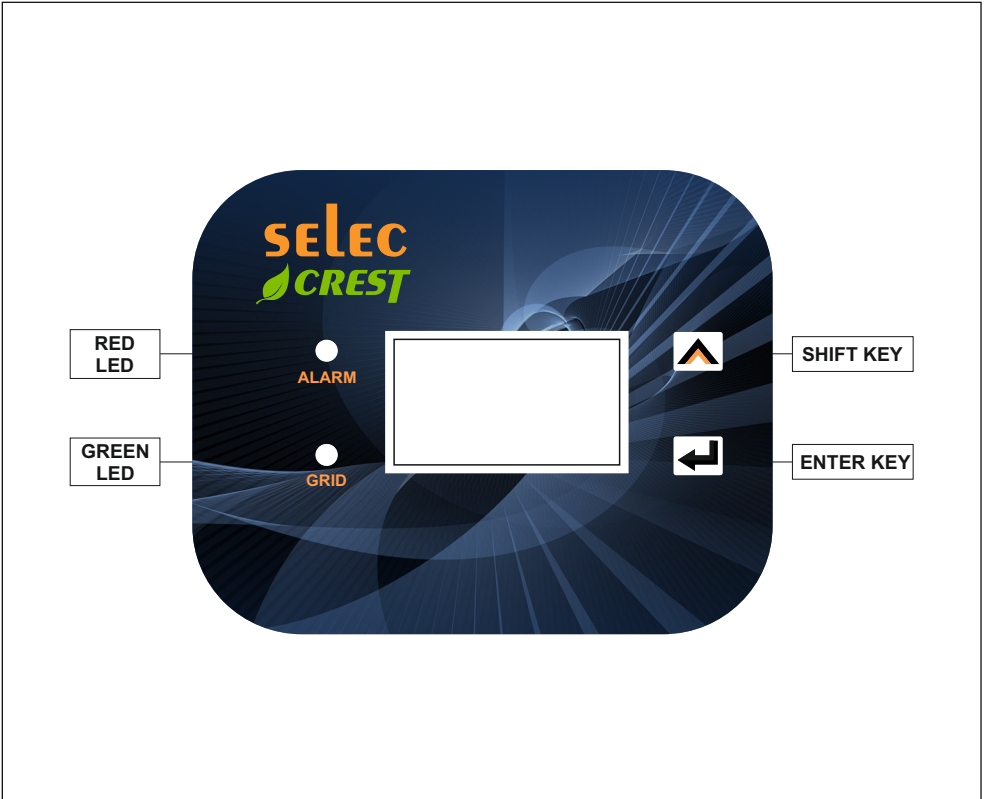


Fig 19

7.2.2 LCD Flow chart

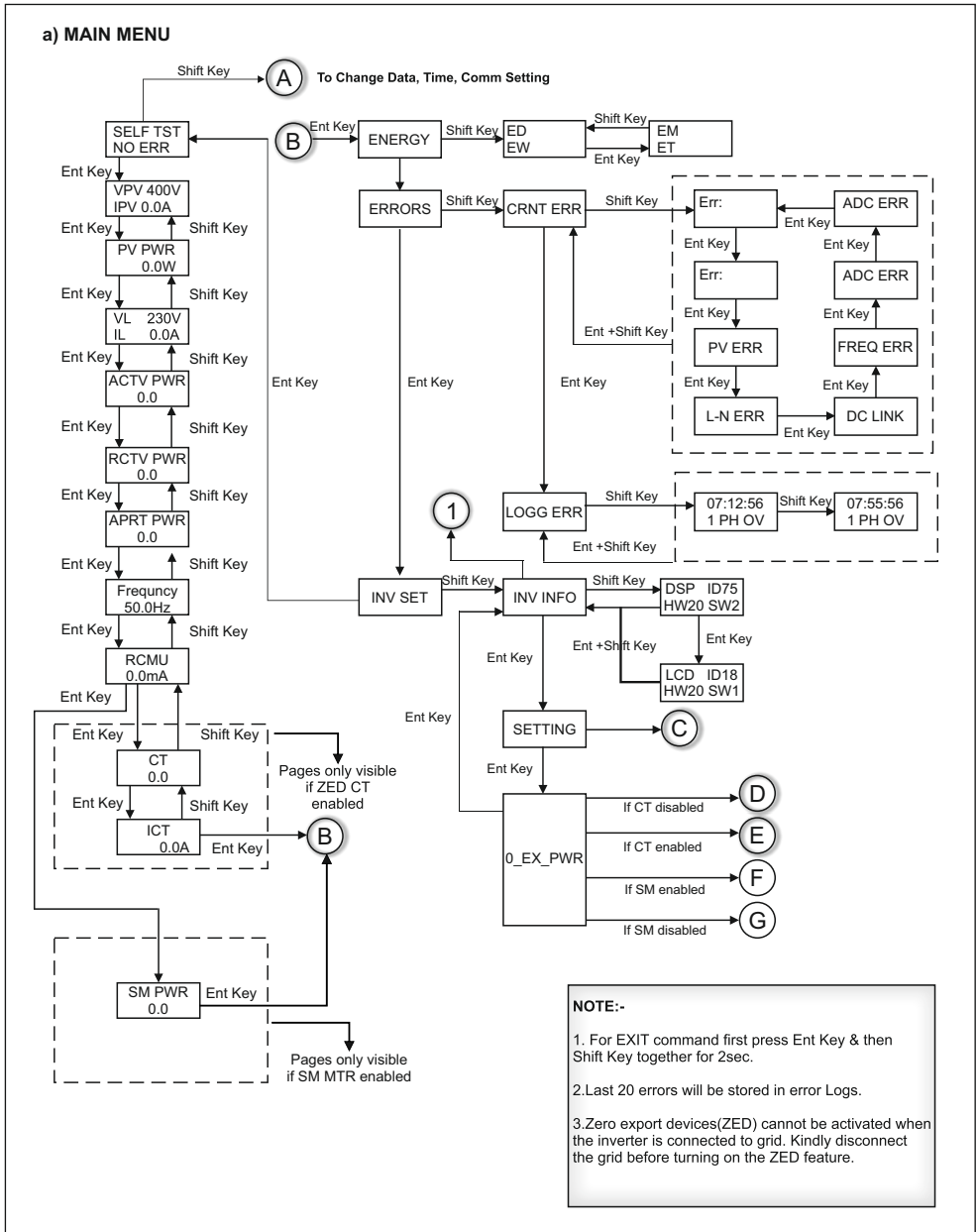
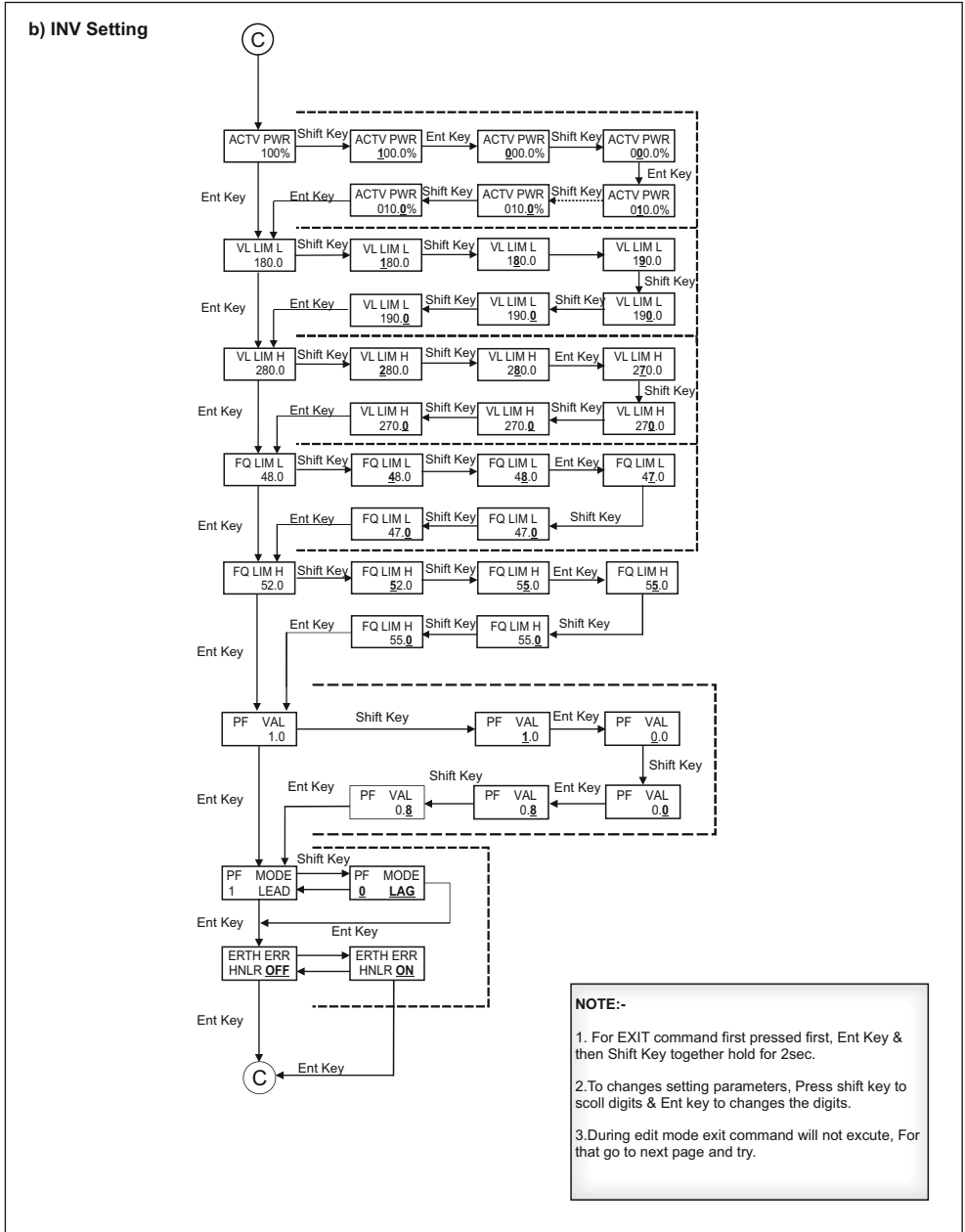


Fig 20

7.2.3 LCD KEY FUNCTIONALITY



NOTE:-

1. For EXIT command first pressed first, Ent Key & then Shift Key together hold for 2sec.
2. To changes setting parameters, Press shift key to scoll digits & Ent key to changes the digits.
3. During edit mode exit command will not excute, For that go to next page and try.

Fig 21

7.2.4 Power Export Control

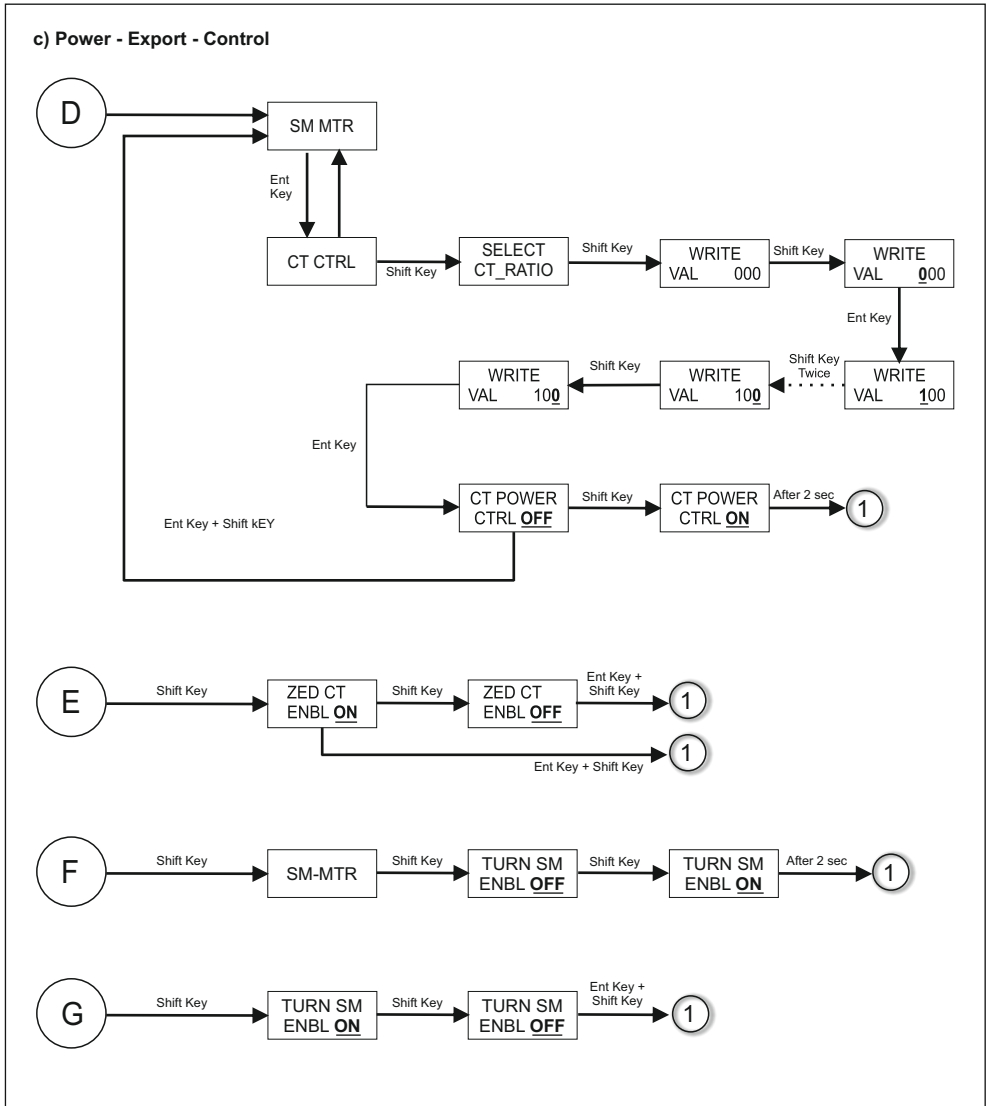


Fig 22

7.2.5 Change Date and Time

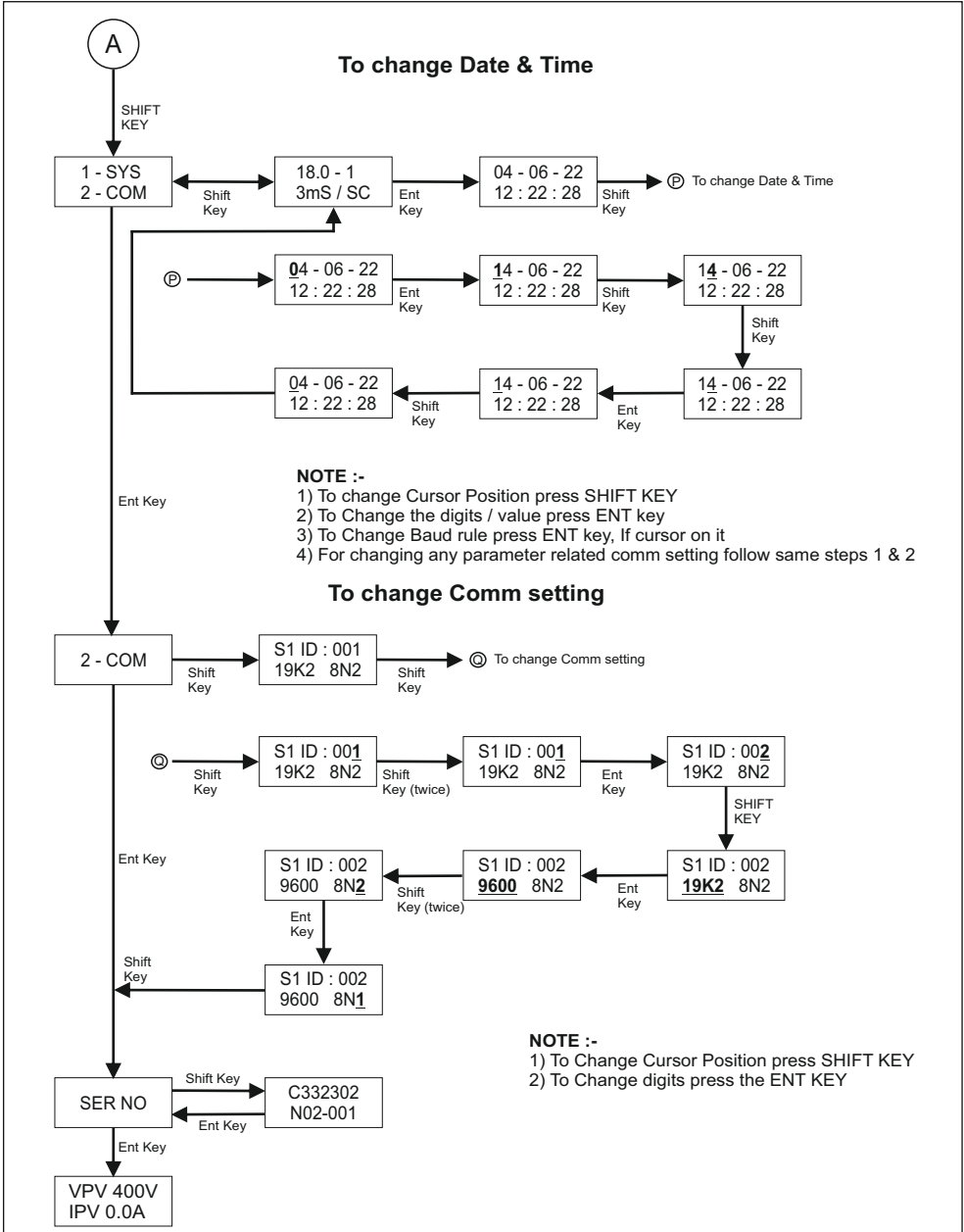


Fig 23

7.3 Communication module connections

7.3.1 RS-485 Configuration

Pin description of RS-485 Communication terminal is given below in Table 5

Pin Notation	Function
A+	Data +
A-	Data -

Table 5

Connecting single inverter for RS-485 communication:

- Connect A+ & A- pin of RS-485 port to the Data +, Data -.

Following data format is used for Communication

Data format:

Baud rate : 19200

Data bits : 8

Stop bit : 2

Parity : NONE

7.3.2 Monitor inverter status

a) Monitor single inverter's status with RS485

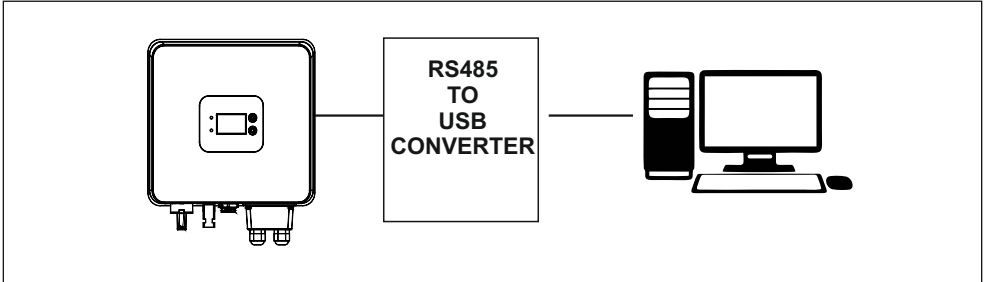


Fig.24

b) Monitor multiple inverters with RS485

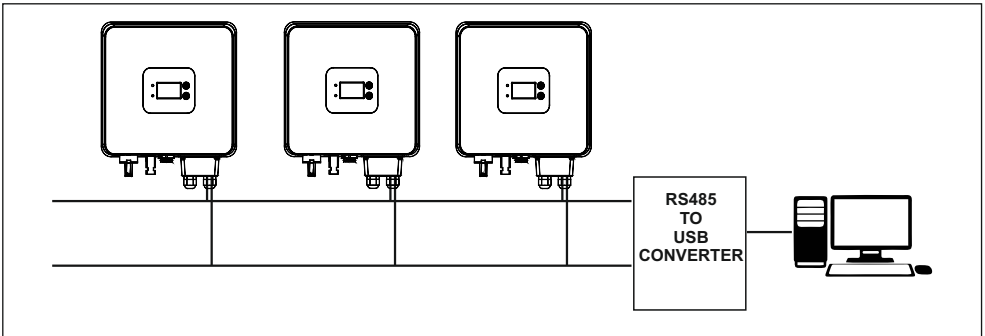


Fig.25

c) Monitor Inverter with External wireless device

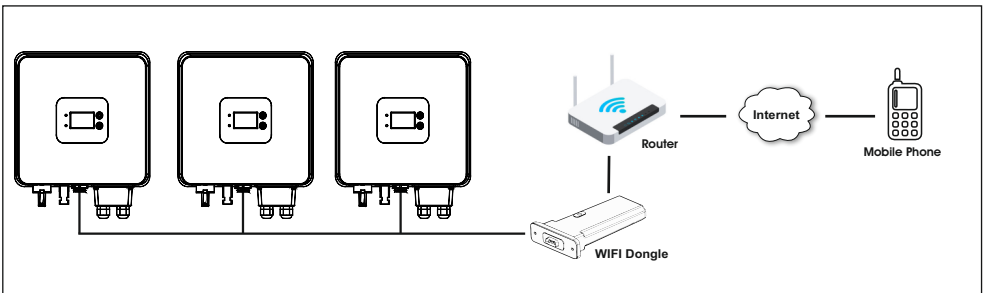


Fig. 26

7.4 Troubleshooting

7.4.1 Logged error definitions

Log Variables Data			
Sr.No	Log Code	Log Description	Suggestion
1	PH OV	Phase Over Voltage	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter Output terminal. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
2	PH UV	Phase Under Voltage	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter terminal. 3.Check AC wiring, whether line wire is swapped with earth. 4.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
3	PH OC	Phase Over Current	1.Disturbance in AC Voltage. 2.Surge Occurs during operation. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
4	VEN	Earth Voltage Out of Range	1.Turn OFF DC Switch & Turn off AC supply. 2.Check Solar PV panel earthing. 3.Check earthing wire connection of inverter. 4. Check if Line and Neutral are correctly connected. 5.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
5	Fr HI	Grid Frequency High	1.Turn OFF DC Switch. 2.Check AC frequency on the inverter terminal. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
6	Fr LW	Grid Frequency Low	1.Turn OFF DC Switch. 2.Check AC frequency on the inverter terminal. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
7	INSR	PV Insulation Resistance Out of Range	1.Turn OFF DC Switch & Turn off AC supply. 2.Check Solar PV enclosure earthing. 3.Check earthing wire connection of inverter. 4.Restart Inverter,if error persists contact Selec Controls Pvt Ltd.
8	DUTY	Inverter Duty Out of Range	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
9	CTR T	Main Controller Temperature Out of Range	1.Check ambient temperature. 2.Check installation environment. 3.If error persists contact Selec Controls Pvt Ltd.
10	INV T	Inverter Module Temperature Out of Range	
11	BST NTC	Boost module Temperature Out of Range	
12	R CNTR	Redundant Controller Temperature Out of Range	
13	PV OV	PV High Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter 3.If voltage is lower than 550V,contact Selec Controls Pvt Ltd.
14	PV UV	PV Low Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multi meter 3.If voltage is more than 80V,contact Selec Controls Pvt Ltd.
15	PV OC	PV Over Current	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
16	BV OV	DC Bus Over Voltage	
17	BV UV	DC Bus Low Voltage	

Table 6

7.4.2 Error definitions (Current error)

Error Definitions			
Sr.No	Error message	Error description	Suggestion
1	IRES	PV Insulation Resistance Out of Range	1.Turn OFF DC Switch & Turn off AC supply. 2.Check Solar PV enclosure earthing. 3.Check earthing of inverter. 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
2	RCMU	Inverter Residual Current Out of Range	Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
3	EARTH F	Earth Absent/ Inverter Earth to Neutral Voltage High	1.Turn OFF DC Switch & Turn off AC supply. 2.Check Solar PV enclosure earthing. 3.Check earthing of inverter. 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
4	CNTR OT	Controller Temperature Out of Range	1.Check ambient temperature. 2.Check installation environment. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
5	PV OC	Boost/PV Over Current	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
6	LINE OC	Inverter-Phase Over Current	
7	PV OV	Boost/PV High Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter 3.If voltage is lower than 550V,contact Selec Control Pvt Ltd.
8	LINE OV	Inverter-Phase Over Voltage	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter terminal. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
10	PV UV	Inverter-Phase Under Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter. 3.If voltage is more than 80V,contact Selec Controls Pvt Ltd.
11	LINE UV	Inverter-Phase Under Voltage	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter terminal. 3.Check AC wiring, whether earth wire is swapped with earth. 4.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
14	FREQ OF	Grid Frequency High	1.Turn OFF DC Switch. 2.Check AC frequency on the inverter terminal. 3. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
15	FREQ UF	Grid Frequency Low	

Table 7

7.4.3 Self Test Error Definitions

Self Test Error Definitions			
Sr.No	Error message	Error description	Suggestion
1	COMM ERR	Internal Communication Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
2	FRC ERR	PWM & ADC FRC connection Error	
3	PV LOW ERR	PV low voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter. 3.If voltage is more than 250V,contact Selec Controls Pvt Ltd.
4	GRID ERR	GRID Absent/Out of Range	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter terminal. 3.Check AC wiring, whether any Line wire is swapped with Neutral or ground. 4.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
5	ADC SENSING ERR	Current/NTC Sensing Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
6	EARTH AB	Earth Absent/ Inverter Earth to Neutral Voltage Error	1.Turn OFF DC Switch. 2.Check AC Voltage on the inverter terminal. 3.Check AC wiring, whether any Line wire is swapped with Neutral or ground. 4.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
7	IRES ERR	Insulation Resistance Out of Range	1.Turn OFF DC Switch & Turn off AC supply. 2.Check Solar PV enclosure earthing. 3.Check earthing of inverter. 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
8	RI2 ERR	Output Relay2 Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
9	RI1 ERR	Output Relay1 Error	
10	ENBL PIN	Control Enable Pin Error	
11	CT ABS	CT Detection Error	
12	EPRM ERR	EEPROM memory log error	
13	PV UNSB	PV UNSTABLE ERROR	

Table 8

7.4.4 ADC Sensing Error Definitions

ADC Sensing Error Definitions			
Sr.No	Error message	Error description	Suggestion
1	ADC IPV	PV Current sensing error	1. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
2	ADC IPH	Inverter - Phase current sensing error	
3	ADC IT	Inverter module NTC sensing error	

Table 9

8. Commissioning of inverter

Caution



- Check AC & DC Voltages are within range of particular GTI-SERIES inverter specification
- Check protective earth is connected
- Check DC connectors are connected
- Check AC connectors are connected

8.1 Initial turn on of inverter

- Turn ON DC switch . As soon as DC switch is ON , LCD display will glow. There are two LED indications on front sticker. Red is alarm & Green is Grid feed status
- Inverter starts self test, for checking internal circuitary is proper or not before doing grid feed
- If any fault occurs, then alarm LED will glow in red colour this will alert user regarding a particular fault
- If every thing is normal then, inverter starts feeding power into the grid . Grid status LED will glow green

9. Maintenance and Cleaning

9.1 Maintenance

Warning



- Before any maintenance, please switch AC and DC power off atleast 5 minutes before proceeding to avoid risk of electrical shock.
- Normally, the inverter needs no maintenance. Check for any external visible damage and discoloration of the cables and DC switch at regular intervals. Check that all terminals, screws and cables are connected and appear as they did upon installation. If there is any visible damage or visible discoloration of cables or DC switch or if there is any impaired and loose part, please contact the installer.

NOTICE

- Once a year, turn the rotary switch of the DC disconnect switch from the “ON” position to the “OFF” position 5 times in succession. This cleans the contacts of the rotary switch and prolongs the electrical endurance of the DC switch

9.2 Cleaning**WARNING**

- Before starting cleaning of inverter, please ensure that DC switch is turned off and the AC breaker present between GTI-SERIES inverter and grid is also turned off. After switching off the DC switch and AC breaker wait for atleast 5 minutes to avoid risk of electric shock

CAUTION

- Risk of burns due to hot heatsink
- The heatsink may exceed 70°C during operation. Do not touch the heat sink during operation. Wait atleast 30 minutes before cleaning until the heat sink has cooled down
- Do not use water, corrosive chemicals or detergent to clean inverter and heatsink
- Please clean the inverter with an air blower, a dry & soft cloth or a soft brush
- Please ensure that there is enough space around the heatsink for ventilation. Inspect the heat sink for blockage (dust, snow, etc.) and clean them if they exist using an air blower, a dry and soft cloth

10. Decommissioning of inverter

- Turn OFF AC breaker
- Turn OFF DC switch
- Wait till i) Alarm LED turn OFF ii) LCD light turn off
- Wait for approx. 30 minutes before touching Inverter. Surface may be hot
- Remove DC cables
- Unscrew AC connector
- Remove AC cables
- Unscrew communication plate
- Unlock communication gland
- Remove RS-485, Dry contact DI terminal connection if you have done any
- Unscrew mounting screws to remove inverter from wall
- Pack inverter in carton which is provided during purchase. If that carton is not available then use equal size carton
- Adopt E-waste Regulation guideline while disposing faulty inverter. Do not dispose inverter with household waste

11. Technical specifications

Model	GTI003WLM1PW1	GTI003WLM1PNS1	GTI002WLM1PW1	GTI002WLM1PNS1	GTI001WLM1PW1	GTI001WLM1PNS1
Input Data						
Max. DC Power	4200 W		3500 W		2100 W	
Max. DC Voltage	550 VDC					
Start Up Voltage	65 VDC					
PV Voltage range	65-550 VDC					
MPP Voltage range	65-550 VDC					
Max. PV Isc	16A					
Max. Input current	12A					
Backfeed current	0A					
Number of independent MPP trackers/ strings per MPP tracker	1					
Output (AC)						
Rated AC Output power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. AC apparent power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. Output current	16 A		11.9 A		7.1 A	
Nominal AC current	13.8		10.4		6.3	
Nominal AC voltage	1P/2W/PE, 240/50Hz					
Nominal AC voltage range	180 ~ 280 V					
AC grid frequency	50 Hz					
AC grid frequency range	45 ~ 55Hz					
Inrush current	< 10A / 1.6mS					
Maximum output fault current	60A / 100uS					
Maximum output overcurrent protection (RMS)	16 A					
Power Factor at rated power	> 0.99					
Adjustable displacement power factor	0.8 leading – 0.8 lagging					
THDi @ full load	< 3%					
AC grid connection type	Single Phase + N + E					
Efficiency						
Max. Efficiency	97.4%					
MPPT Efficiency	> 99.9%					
Protection devices						
DC reverse polarity protection	Yes					
DC switch for each MPPT	Optional					
Output AC overcurrent protection	Yes					
Output AC over & under frequency protection	Yes					
Output AC over & under voltage protection	Yes					
Integrated all-pole sensitive leakage current monitoring unit & short circuit protection	Yes					
Anti Islanding & Insulation resistance protection	Yes					

Model	GTI003WLM1PW1	GTI003WLM1PNS1	GTI002WLM1PW1	GTI002WLM1PNS1	GTI001WLM1PW1	GTI001WLM1PNS1
General data						
Dimensions (W/H/D) in mm.	275 X 313 X 131 in mm.					
Weight	5.2 kg					
Operating temperature range	-25°C to 60°C					
Noise emission	< 25 dB					
Altitude	< 4000 m					
Self consumption	< 0.5W					
Topology	Transformerless					
Cooling concept	Natural Convection					
Environment protection rating	IP65					
Relative humidity	0 to 100%					
Pollution degree	Internal II, External III					
Over voltage category	AC output III, DC input II					
Safety class	Plastic enclosure with protective earth					
Environmental category	Outdoor, wet location					
Features						
DC Connection	MC4					
AC Connection	Screw Terminal					
Display	LCD with LED indication					
Interfaces: RS485 / WiFi GPRS	Yes / Optional					
Warranty	10 Years					
Standard compliance	IEC 61683, IEC 60068, IEC 61727, IEC 61000-6-2, IEC 61000-6-3					
Certification	IS 16221-1/2, IS16169					

Technical specifications

Model	GTI003WLM1PW2	GTI003WLM1PNS2	GTI002WLM1PW2	GTI002WLM1PNS2	GTI001WLM1PW2	GTI001WLM1PNS2
Input Data						
Max. DC power	4200 W		3500 W		2100 W	
Max. DC voltage	550 VDC					
Start Up voltage	65 VDC					
PV voltage range	65-550 VDC					
MPP voltage range	65-550 VDC					
Max. PV Isc	20A					
Max. Input current	17A					
Backfeed current	0A					
Number of independent MPP trackers / strings per MPP tracker	1					
Output (AC)						
Rated AC output power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. AC apparent power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. Output current	16 A		11.9 A		7.1 A	
Nominal AC current	13.8		10.4		6.3	
Nominal AC voltage	1P/2W/PE, 240/50Hz					
Nominal AC voltage range	180 ~ 280 V					
AC grid frequency	50 Hz					
AC grid frequency range	45 ~ 55Hz					
Inrush current	< 10A / 1.6mS					
Maximum output fault current	60A / 100uS					
Maximum output overcurrent protection (RMS)	16 A					
Power factor at rated power	> 0.99					
Adjustable displacement power factor	0.8 leading – 0.8 lagging					
THDi @ full load	< 3%					
AC grid connection type	Single Phase + N + E					
Efficiency						
Max. Efficiency	97.4%					
MPPT Efficiency	> 99.9%					
Protection devices						
DC reverse polarity protection	Yes					
DC switch for each MPPT	Optional					
Output AC overcurrent protection	Yes					
Output AC over & under frequency protection	Yes					
Output AC over & under voltage protection	Yes					
Integrated all-pole sensitive leakage current monitoring unit & short circuit protection	Yes					
Anti Islanding & Insulation resistance protection	Yes					

Model	GTI003WLM1PW2	GTI003WLM1PNS2	GTI002WLM1PW2	GTI002WLM1PNS2	GTI001WLM1PW2	GTI001WLM1PNS2
General Data						
Dimensions (W/H/D) in mm.	275 X 313 X 131 in mm.					
Weight	5.2 kg					
Operating temperature range	-25°C to 60°C					
Noise emission	< 25 dB					
Altitude	< 4000 m					
Self consumption	< 0.5W					
Topology	Transformerless					
Cooling concept	Natural Convection					
Environment protection rating	IP65					
Relative humidity	0 to 100%					
Pollution degree	Internal II, External III					
Over voltage category	AC output III, DC input II					
Safety class	Plastic enclosure with protective earth					
Environmental category	Outdoor, wet location					
Features						
DC Connection	MC4					
AC Connection	Screw Terminal					
Display	LCD with LED indication					
Interfaces: RS485 / WiFi GPRS	Yes / Optional					
Warranty	10 Years					
Standard compliance	IEC 61683, IEC 60068, IEC 61727, IEC 61000-6-2, IEC 61000-6-3					
Certification	IS 16221-1/2, IS16169					

Technical specifications

Model	GTI003WLM1PW3	GTI003WLM1PNS3	GTI002WLM1PW3	GTI002WLM1PNS3	GTI001WLM1PW3	GTI001WLM1PNS3
Input Data						
Max. DC power	4200 W		3500 W		2100 W	
Max. DC voltage	550 VDC					
Start Up voltage	65 VDC					
PV voltage range	65-550 VDC					
MPP voltage range	65-550 VDC					
Max. PV Isc	30A					
Max. Input current	20A					
Backfeed current	0A					
Number of independent MPP trackers / strings per MPP tracker	1					
Output (AC)						
Rated AC output power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. AC apparent power	3.3 kVA		2.5 kVA		1.5 kVA	
Max. Output current	16 A		11.9 A		7.1 A	
Nominal AC current	13.8		10.4		6.3	
Nominal AC voltage	1P/2W/PE, 240/50Hz					
Nominal AC voltage range	180 ~ 280 V					
AC grid frequency	50 Hz					
AC grid frequency range	45 ~ 55Hz					
Inrush current	< 10A / 1.6mS					
Maximum output fault current	60A / 100uS					
Maximum output overcurrent protection (RMS)	16 A					
Power factor at rated power	> 0.99					
Adjustable displacement power factor	0.8 leading – 0.8 lagging					
THDi @ full load	< 3%					
AC grid connection type	Single Phase + N + E					
Efficiency						
Max. Efficiency	97.4%					
MPPT Efficiency	> 99.9%					
Protection devices						
DC reverse polarity protection	Yes					
DC switch for each MPPT	Optional					
Output AC overcurrent protection	Yes					
Output AC over & under frequency protection	Yes					
Output AC over & under voltage protection	Yes					
Integrated all-pole sensitive leakage current monitoring unit & short circuit protection	Yes					
Anti Islanding & Insulation resistance protection	Yes					

Model	GTI003WLM1PW3	GTI003WLM1PNS3	GTI002WLM1PW3	GTI002WLM1PNS3	GTI001WLM1PW3	GTI001WLM1PNS3
General Data						
Dimensions (W/H/D) in mm.	275 X 313 X 131 in mm.					
Weight	5.2 kg					
Operating temperature range	-25°C to 60°C					
Noise emission	< 25 dB					
Altitude	< 4000 m					
Self consumption	< 0.5W					
Topology	Transformerless					
Cooling concept	Natural Convection					
Environment protection rating	IP65					
Relative humidity	0 to 100%					
Pollution degree	Internal II, External III					
Over voltage category	AC output III, DC input II					
Safety class	Plastic enclosure with protective earth					
Environmental category	Outdoor, wet location					
Features						
DC Connection	MC4					
AC Connection	Screw Terminal					
Display	LCD with LED indication					
Interfaces: RS485 / WiFi GPRS	Yes / Optional					
Warranty	10 Years					
Standard compliance	IEC 61683, IEC 60068, IEC 61727, IEC 61000-6-2, IEC 61000-6-3					
Certification	IS 16221-1/2, IS16169					

11.2 Tightening Torque Required

AC Terminal	0.6 Nm
Enclosure top cover screw	0.7 Nm
RS-485 screw	0.7 Nm
AC Terminal & RS-485 cover screw	0.7 Nm
Earthing screw	2 Nm

Table 11

11.3 Spare parts and accessories

In the following table you will find the optional accessories for your product. If required you can order these from Selec Controls Pvt. Ltd.

Name	Description	Selec Order no.
WiFi	Communication interface	GTI003WLM1PW1 / GTI002WLM1PW1 / GTI001WLM1PW1 GTI003WLM1PW2 / GTI002WLM1PW2 / GTI001WLM1PW2 GTI003WLM1PW3 / GTI002WLM1PW3 / GTI001WLM1PW3
No WiFi	Communication interface	GTI003WLM1PNS1 / GTI002WLM1PNS1 / GTI001WLM1PNS1 GTI003WLM1PNS2 / GTI002WLM1PNS2 / GTI001WLM1PNS2 GTI003WLM1PNS3 / GTI002WLM1PNS3 / GTI001WLM1PNS3

Selec Controls Pvt. Ltd.

Mfg. By: Selec Controls Pvt. Ltd., EL-27/1 EL-27/1 PT, EL-27/2 EL-27/3, Electronic Zone,
TTC Industrial Area, MIDC Mahape Navi Mumbai, Thane, Maharashtra, 400710

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