selec



ON GRID SOLAR INVERTER

OPERATING INSTRUCTIONS

(3kW / 5kW / 6kW / 7kW / 7.5kW / 8kW / 10kW)

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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 three phase utility grid. **GTI-SERIES** are two string inverter with 2 independent MPPT trackers or one string with 1 independent MPPT tracker.*

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

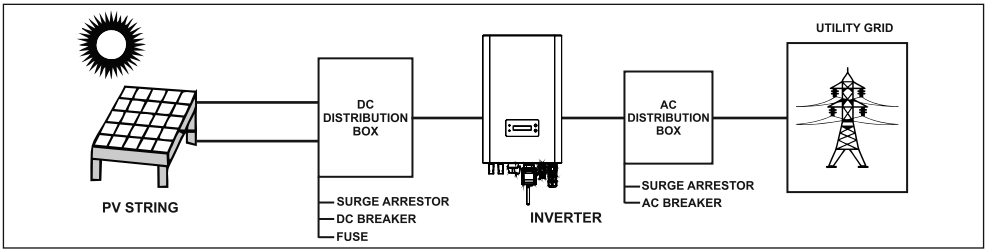
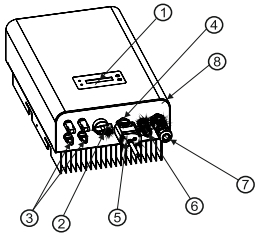


Fig. 1

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



1) LCD
2) DC switch
3) Input PV terminals
4) USB Connector (GPRS / WiFi)
5) WiFi module
6) Zero export / Smart meter connector
7) AC output connector
8) Type label

Fig. 2

2.3 Weight and Dimensions

1) Weight of the Inverter is 11 kilogram

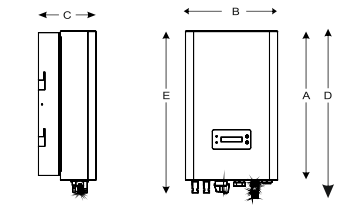


Fig 3(a) Side View (b) Front View

A: 463mm
B: 285mm
C: 178.10mm
D: 550mm
E: 502mm

Fig. 3

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.

selec
PV GRID INVERTER
Model : GTI0103PN402

DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*16A
Apparent Power :
10kVA nom, 11kVA 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

selec
PV GRID INVERTER
Model : GTI0083PN402

DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*12.88A
Apparent Power :
8kVA nom, 8.8kVA 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

selec
PV GRID INVERTER
Model : GTI007X53PN402

DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*12.07A
Apparent Power :
7.5kVA nom, 8.25kVA max

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

IP65

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Mfg. By: Selec Controls Pvt. Ltd.,
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MIDC Mahape Navi Mumbai, Thane,
Maharashtra, 400710

selec
PV GRID INVERTER
Model : GTI0073PN402

DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*11.27A
Apparent Power :
7kVA nom, 7.7kVA max

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

IP65

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Maharashtra, 400710

selec
PV GRID INVERTER
Model : GTI0063PN402

DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*9.66A
Apparent Power :
6kVA nom, 6.6kVA 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

selec
PV GRID INVERTER
Model : GTI0053PN401

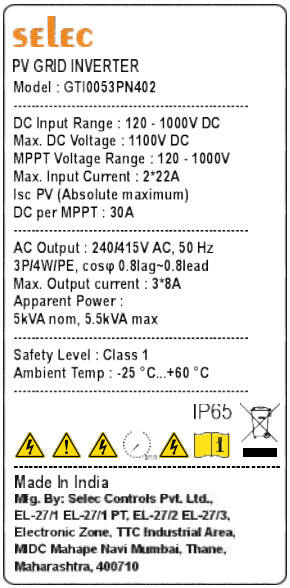
DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 1*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A

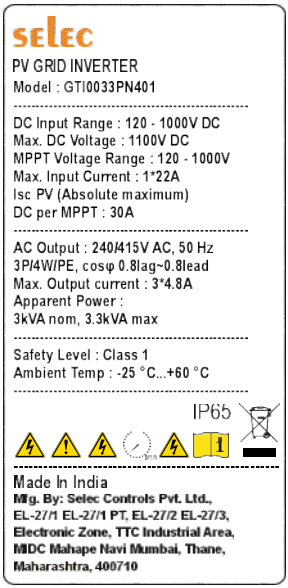
AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*8A
Apparent Power :
5kVA nom, 5.5kVA max

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


selec
PV GRID INVERTER
Model : GTI0053PN402
DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 2*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A
AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*8A
Apparent Power :
5kVA nom, 5.5kVA max
Safety Level : Class 1
Ambient Temp : -25 °C...+60 °C
IP65
Made In India
Mfg. By: Selec Controls Pvt. Ltd.,
EL-2/1 EL-2/1 PT, EL-2/2 EL-2/3,
Electronic Zone, TTC Industrial Area,
MIDC Mahape Navi Mumbai, Thane,
Maharashtra, 400710


selec
PV GRID INVERTER
Model : GTI0033PN401
DC Input Range : 120 - 1000V DC
Max. DC Voltage : 1100V DC
MPPT Voltage Range : 120 - 1000V
Max. Input Current : 1*22A
Isc PV (Absolute maximum)
DC per MPPT : 30A
AC Output : 240/415V AC, 50 Hz
3P/4W/PE, cosφ 0.8lag~0.8lead
Max. Output current : 3*4.8A
Apparent Power :
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-2/1 EL-2/1 PT, EL-2/2 EL-2/3,
Electronic Zone, TTC Industrial Area,
MIDC Mahape Navi Mumbai, Thane,
Maharashtra, 400710

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
	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.

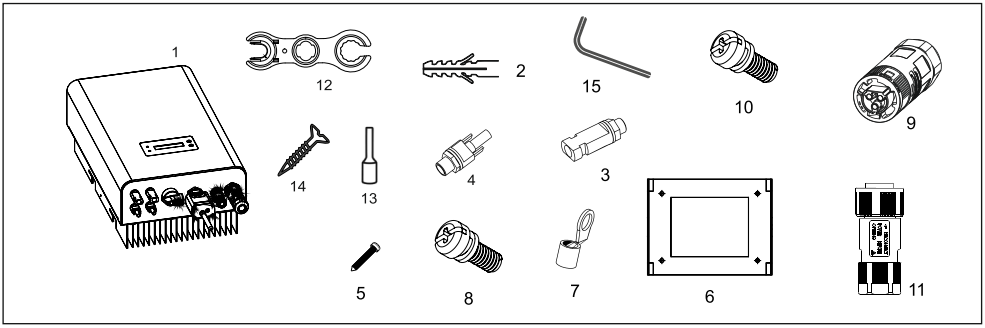


Fig. 4

Item	Quantity	Description
1	1	Inverter
2	4	Rawal plug
3	2	PV male connector
4	2	PV female connector
5	4	Self tapping screw
6	1	Wall mounting plate
7	1	Ring type lug
8	1	M5 x 8mm philips head screw
9	1	AC circular connector female
10	2	M4 x 10mm philips head screw (Inverter mounting)
11	1	Zero export / Smart meter connector
12	1	MC4 opening tool
13	5	Ferrule lug 4sqmm
14	4	Screw philips ms 14x38mm
15	1	Allen key for comm connector

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 12 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.

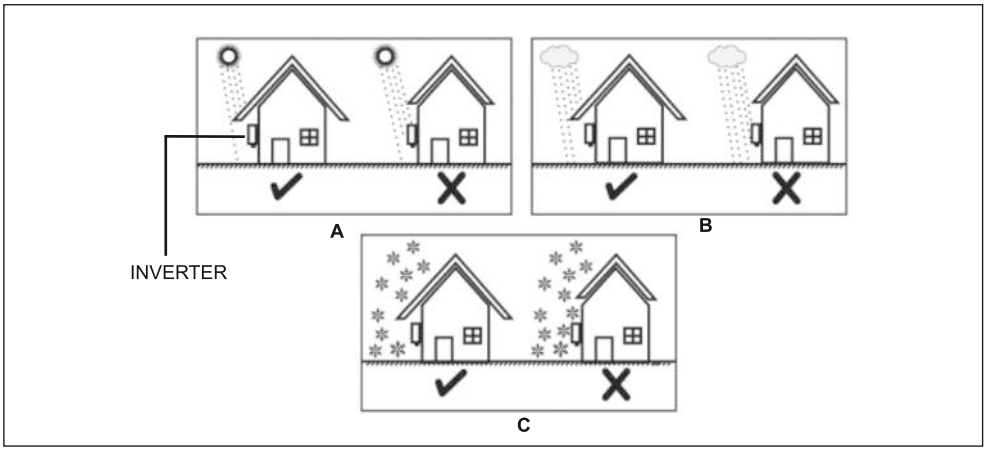


Fig. 5

Ideal installing position shown in fig 6

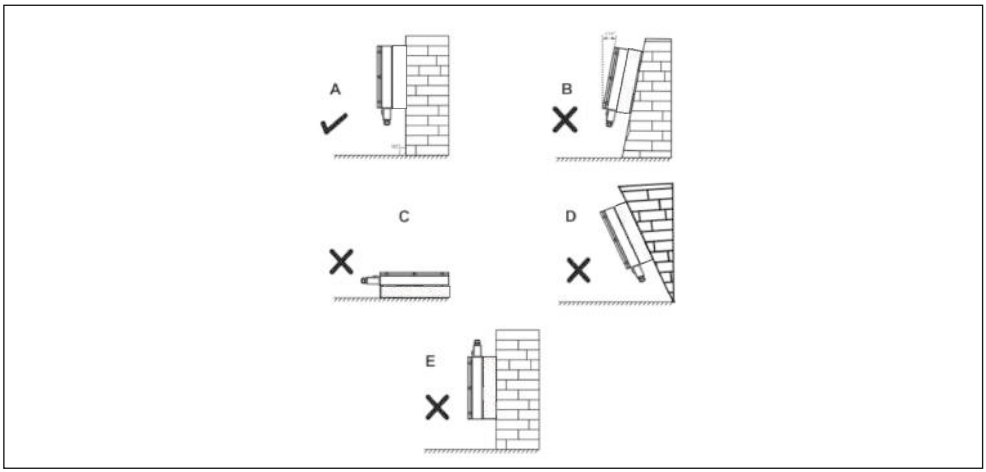


Fig. 6

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, Decomissioning, Turning ON and turning OFF is easily possible

5.2.1 Clearance for installation

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

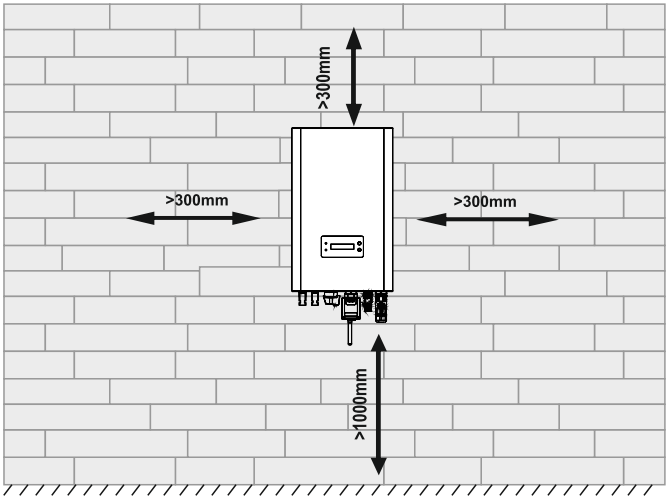


Fig. 7

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.

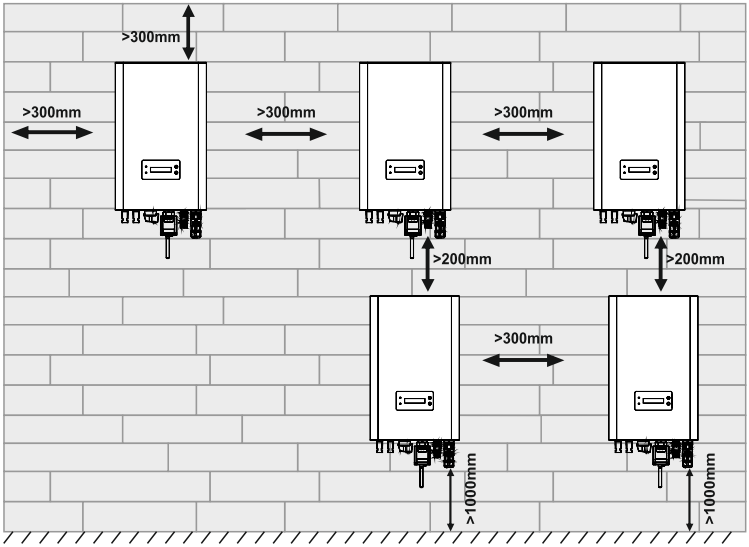


Fig. 8

5.2.2 Mounting inverter on wall

Steps to mount inverter with bracket

Step 1: Drill four holes on wall at distance of inverter mounting position as shown in fig. 9 & insert self tapping screw in holes.

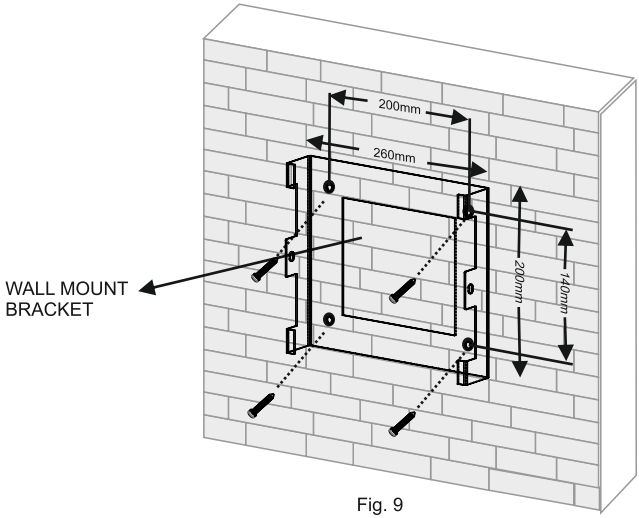


Fig. 9

Step 2: 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.

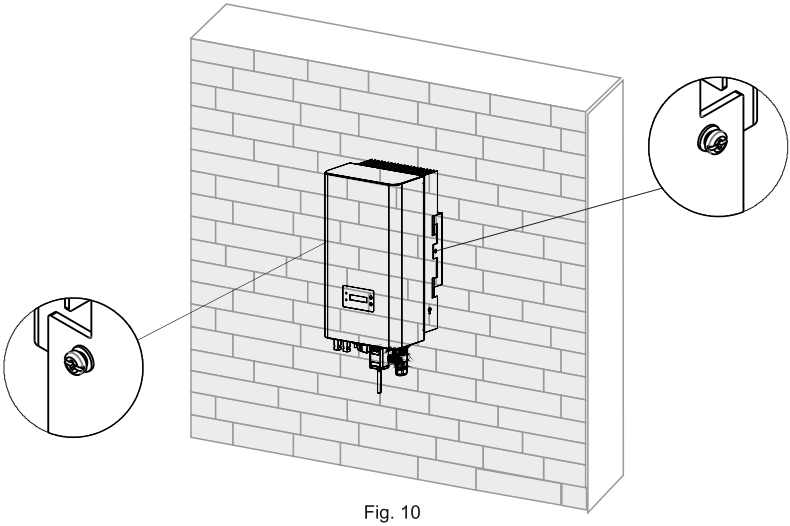


Fig. 10

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.

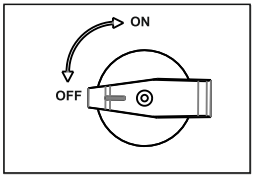


Fig. 11

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
GTI0103PN402	22A	4 sq.mm
GTI0083PN402	22A	4 sq.mm
GTI007X53PN402	22A	4 sq.mm
GTI0073PN402	22A	4 sq.mm
GTI0063PN402	22A	4 sq.mm
GTI0053PN401	22A	4 sq.mm
GTI0053PN402	22A	4 sq.mm
GTI0033PN401	22A	4 sq.mm

Table 4

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

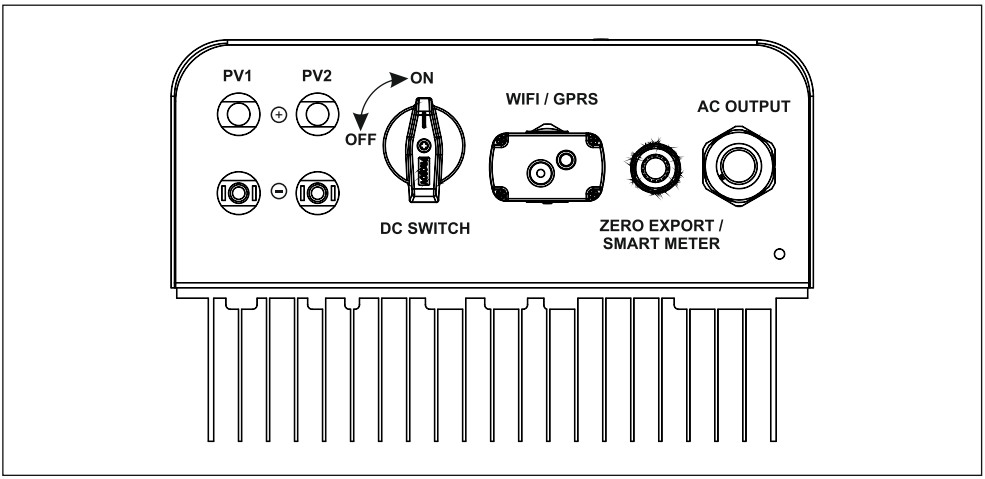


Fig. 12

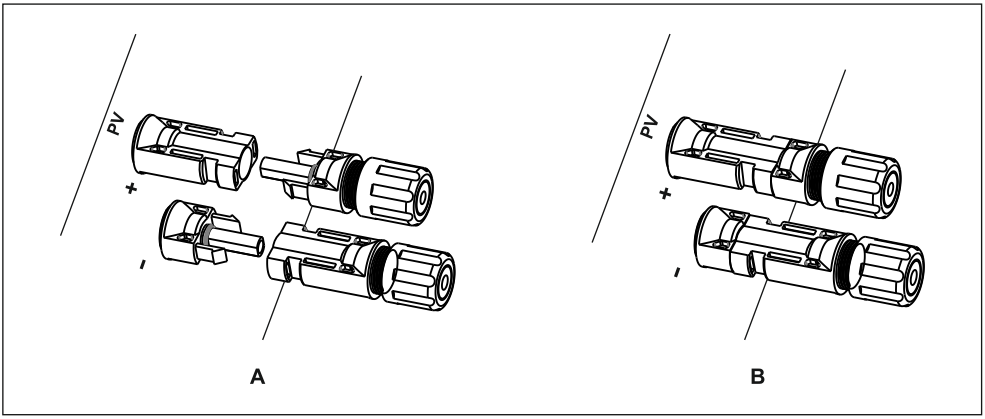


Fig. 13

6.2 AC Connections

Caution

- For the purpose of over current protection use circuit breaker between inverter & utility grid. Use 4 Pole 32A / 415 AC 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
GTI0103PN402	16A	4 sq.mm
GTI0083PN402	12.88A	4 sq.mm
GTI007X53PN402	12.07A	4 sq.mm
GTI0073PN402	11.27A	4 sq.mm
GTI0063PN402	9.66A	4 sq.mm
GTI0053PN401	8A	4 sq.mm
GTI0053PN402	8A	4 sq.mm
GTI0033PN401	4.8A	4 sq.mm

Table 5

1) Take cable side AC connector from accessories and loose the connector gland
2) Use 5 core AC cables of 4 sq.mm size for AC connection (Recommended wire size)
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 circular connector
6) Insert 5 core wire through connector gland and screw a wire in respective terminals on female circular connector
7) Tighten the screw and fit the connector gland to female circular connector

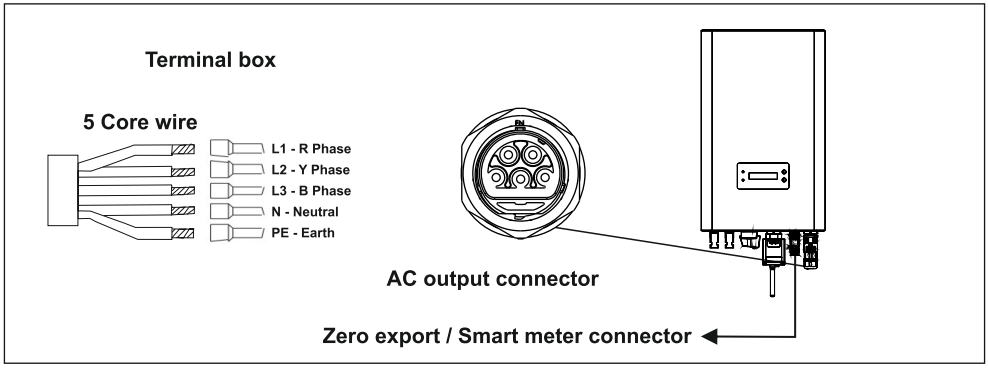


Fig. 14

6.3 Communication module

6.3.1 Communication connection

GTI-SERIES inverter's Communication terminal consist of RS485 and smart meter connections as shown in fig. 15. Table 6 explains signal connection on communication terminal.

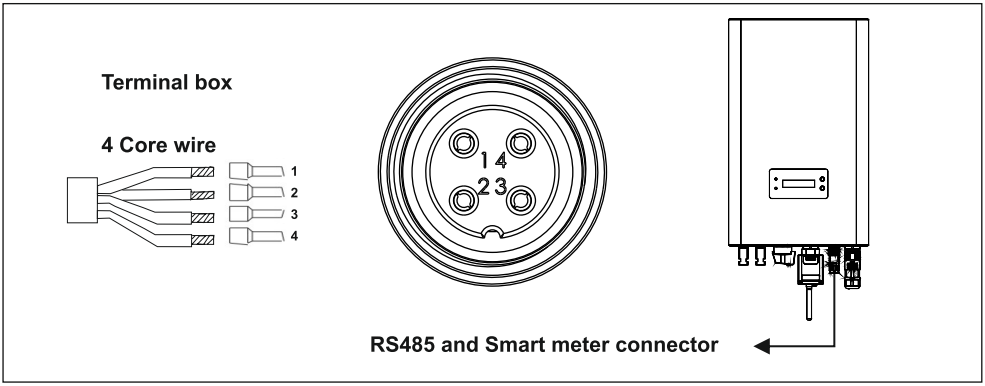


Fig. 15

6.3.1.1 Connecting signal cable

Pin No	Definition	
1	A+	RS485 communication pins
2	A-	
3	SMA+	Smart meter communication pins
4	SMA-	

Table 6

6.3.2 Steps to Communication wiring

1) Take a female 4 pin circular connector from accessories and loose the connector gland

2) Use 4 core AC cables of 1 sq.mm size for communication connection

3) Strip a wires & put these wires in communication connector with respect to shown in 6.3.1.1 table & Screw it tightly, with help of given allen key

4) Fig 15 shows labels for (RS485) com and smart meter connector

5) Insert 4 core wire through connector gland and screw a wire in respective terminals on female circular connector

6) Tighten the screw and fit the connector cap to female circular connector

6.4 AC Grounding

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

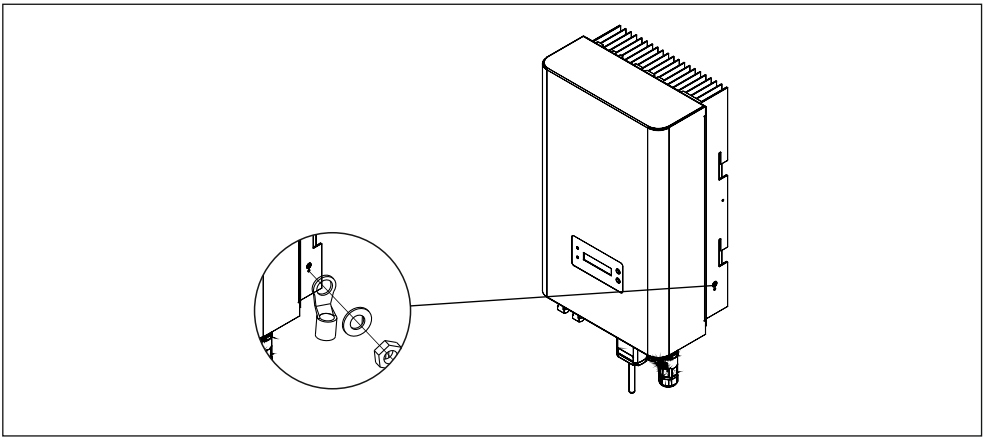


Fig. 16

7. Display, Communication and Troubleshooting

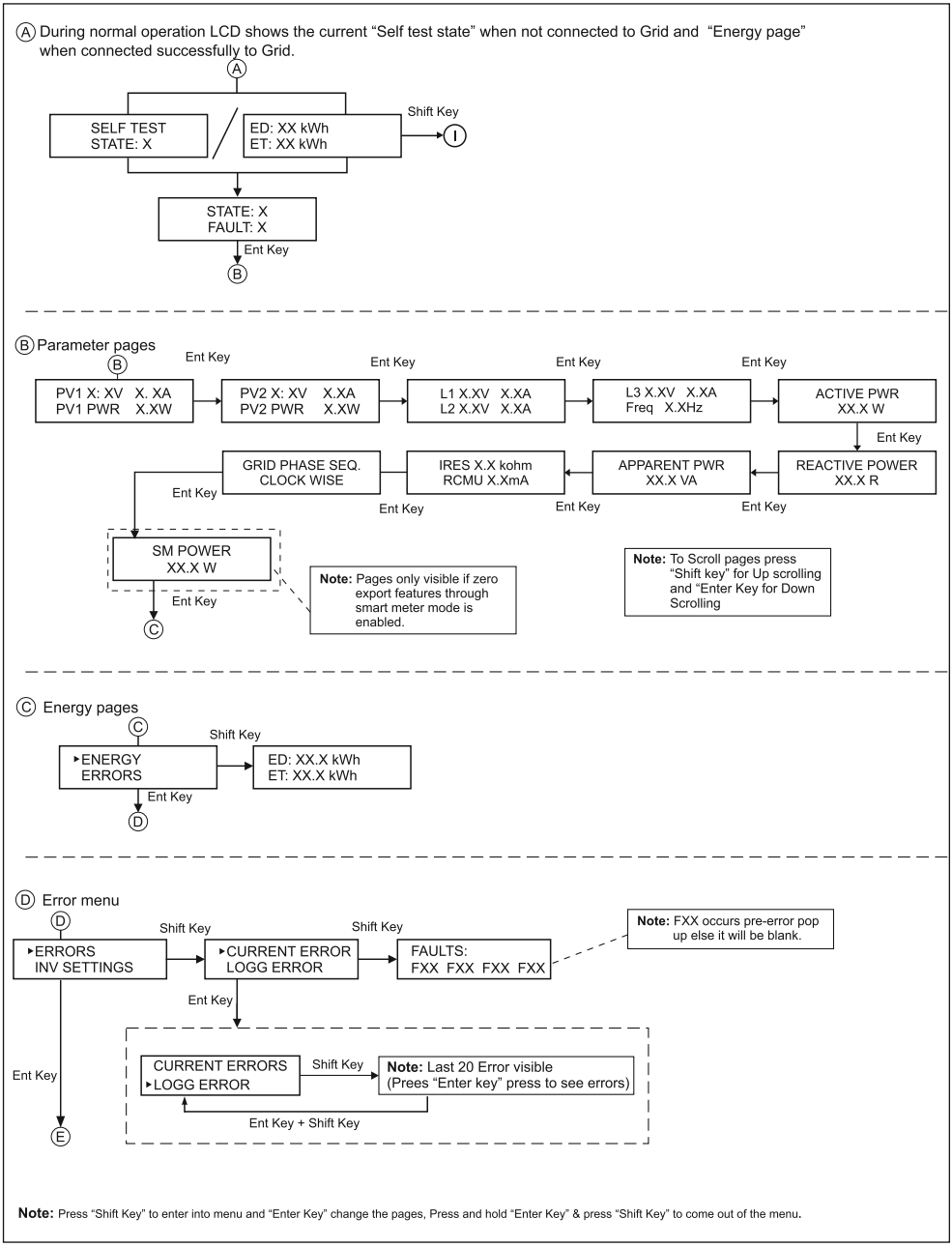
7.1 LCD Operating Steps

7.1.1 LCD Key Annotations



Fig. 17

7.1.2 LCD Operations



Note: Press “Shift Key” to enter into menu and “Enter Key” change the pages, Press and hold “Enter Key” & press “Shift Key” to come out of the menu.

Fig. 18

7.1.3 Inverter Info and Settings

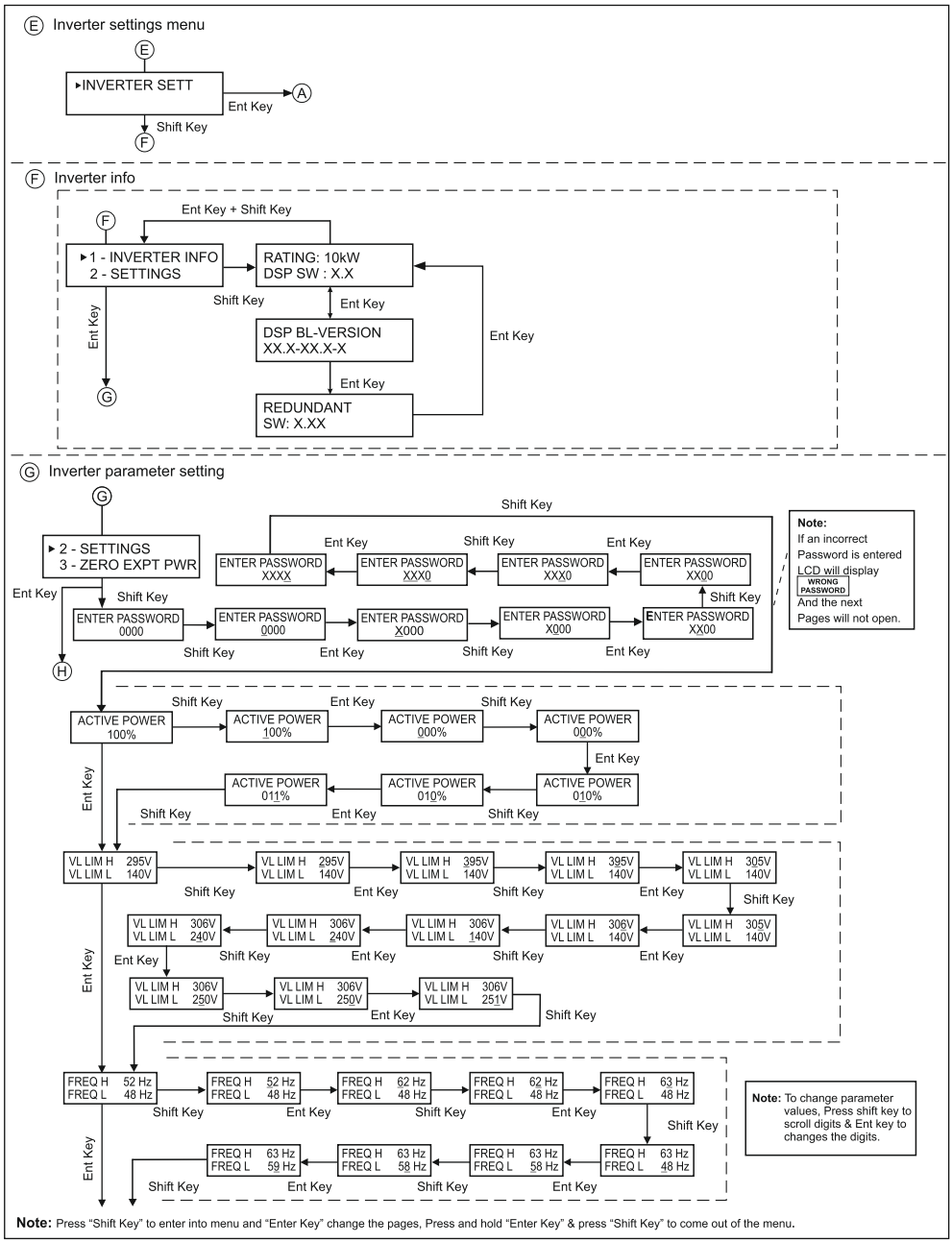


Fig. 19

7.1.4 Zero Export Control

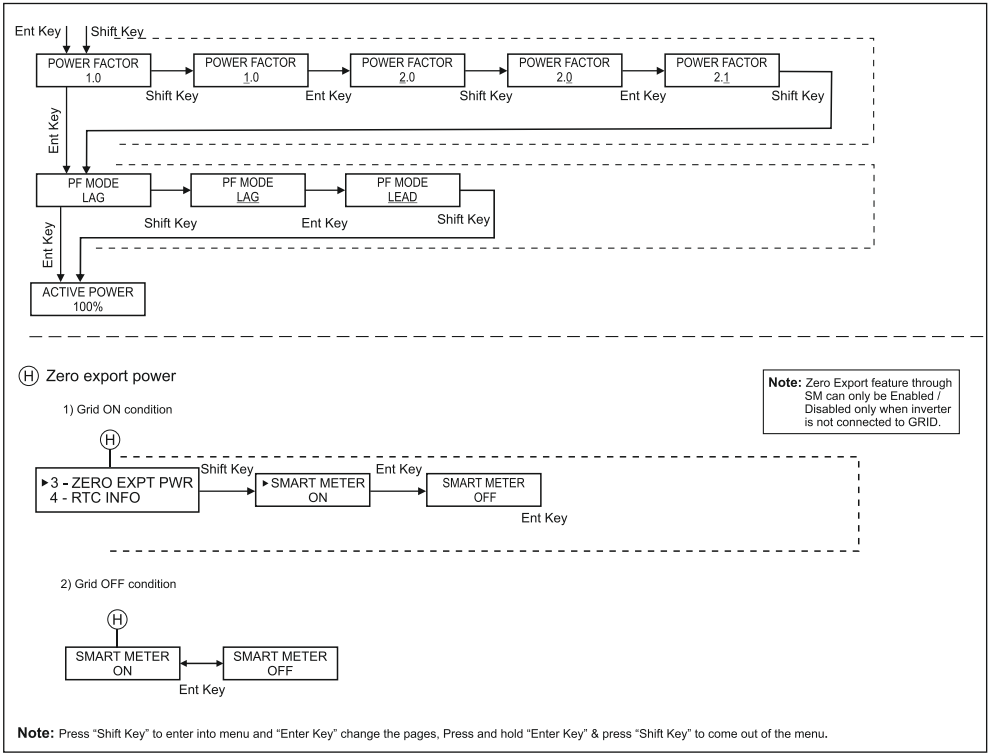
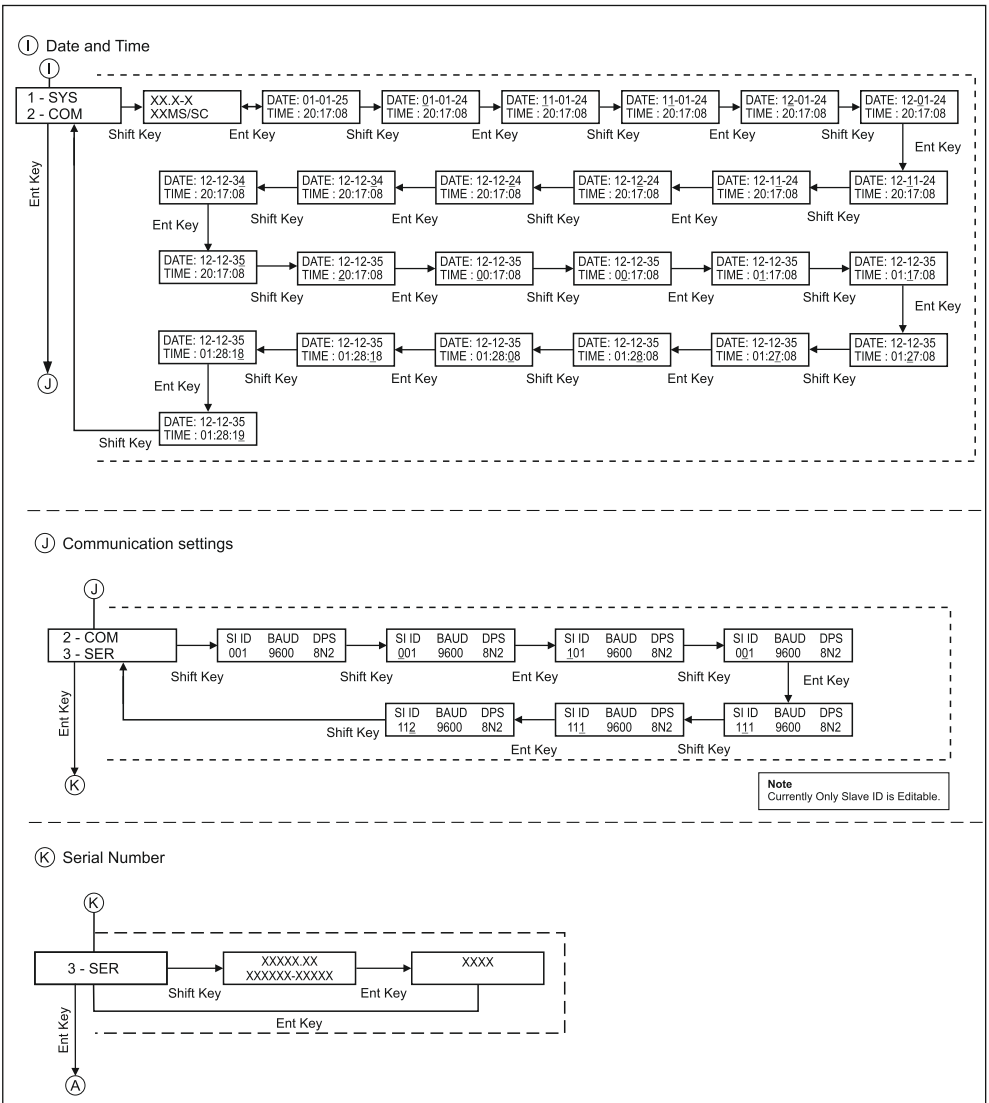


Fig. 20

7.1.5 Change Date and Time



Note: Press “Shift Key” to enter into menu and “Enter Key” change the pages, Press and hold “Enter Key” & press “Shift Key” to come out of the menu.

Fig. 21

7.2 Communication module connections

7.2.1 RS485 Configuration

Pin description of RS485 Communication terminal is given below in Table 5

Pin Notation	Function
A+	Data +
A-	Data -

Table 7

Connecting single inverter for RS485 Communication:

Connect A+ & A- pin of RS485 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

7.2.2 Monitor inverter status

a) Monitor single inverter's status with RS485

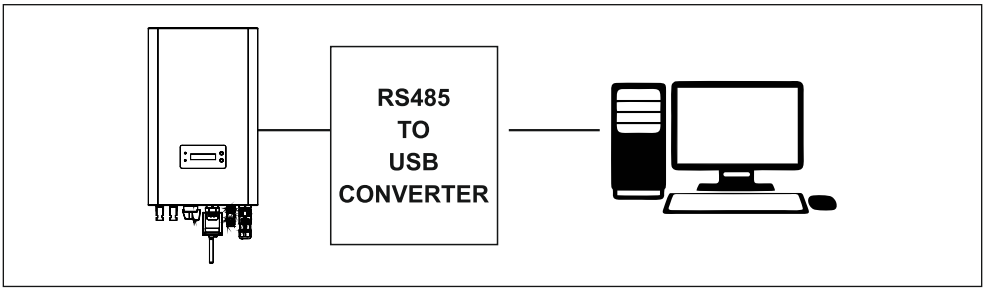


Fig. 22

b) Monitor multiple inverters with RS485

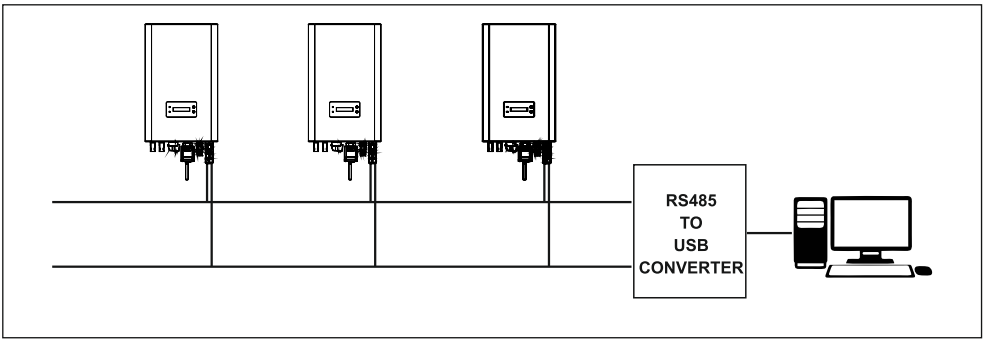


Fig. 23

c) Monitor Inverter with External wireless device

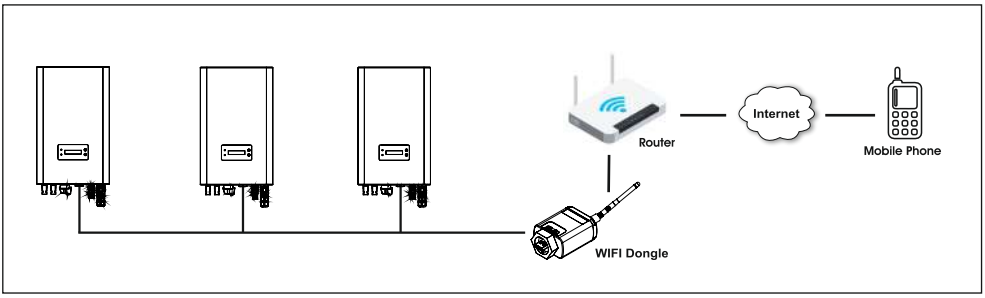


Fig. 24

7.3 Troubleshooting

7.3.1 Error logs*

Log variables data			
Sr.No	**Log code**	**Log description**	**Suggestion**
1	F13	Grid over voltage L1	1. Check If AC Voltage on Inverter AC terminals is in the following voltage range L-N(216-264V AC), L-L (374 457V AC) with help of multimeter 2. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
	F14	Grid over voltage L2	
	F15	Grid over voltage L3	
2	F16	Grid under voltage L1	
	F17	Grid under voltage L2	
	F18	Grid under voltage L3	
3	F19	Grid over current software L1	1. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
	F20	Grid over current software L2	
	F21	Grid over current software L3	
4	F24	Over frequency	1. Turn OFF DC switch 2. Check If AC Voltage Frequency on Inverter AC terminals is in the following frequency range L-N (48.5-51.5Hz) with help of multimeter 3. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
5	F23	Under frequency	
6	F58	Duty error	
7	F35	Controller over temperature	1. Check ambient temperature 2. Check installation environment 3. If error persists contact Selec Controls Pvt Ltd.
8	F30	Boost 1 over temperature	
9	F31	Boost 2 over temperature	
10	F38	PV1 over voltage	1. Turn OFF DC switch 2. Check PV voltage with Multimeter 3. PV voltage range should be between 140V DC and 1000V DC 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
11	F39	PV2 over voltage	
12	F43	PV1 under voltage	
13	F44	PV2 under voltage	
14	F48	PV1 over current software	1. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
15	F49	PV2 over current software	
16	F53	PV1 over current hardware	
17	F54	PV2 over current hardware	
18	F59	DC bus over voltage	1. Turn OFF DC switch 2. Check PV voltage with Multimeter 3. PV voltage range should be between 140V DC and 1000V DC 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
19	F60	DC bus under voltage	
20	F61	DC bus unbalance	
21	F1	Inter common fail	
22	F2	PV out of range	1. Turn OFF DC switch 2. Check PV voltage with Multimeter 3. PV voltage range should be between 140V DC and 1000V DC 4. Restart inverter, if error persists contact Selec Controls Pvt Ltd.

Log variables data			
Sr.No	**Log code**	**Log description**	**Suggestion**
25	F6	Insulation fault	1. Turn OFF AC switch & Turn off DC switch 2. Check Solar PV enclosure earthing 3. Check earthing wire connection of inverter 4. Check panel shorting with earth 5. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
26	F7	AC voltage unbalance	1. Turn OFF DC switch 2. Check AC voltage on the inverter output terminal with multimeter 3. Voltage range should be in between L-N (216-264V AC), L-L (374-457V AC) 4. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
27	F8	Wrong grid	1. Turn OFF DC switch 2. Check if all 3 phases and Neutral and earth are correctly connected 3. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
28	F9	Inverter relay fault	1. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
29	F10	Grid relay fault	
30	F12	CT absent fault	
31	F22	Grid over current hardware	
32	F26	RCMU fault	
33	F27	Inv L1 over temperature	1. Check ambient temperature 2. Check installation environment 3. If error persists contact Selec Controls Pvt Ltd.
34	F28	Inv L2 over temperature	
35	F29	Inv L3 over temperature	
36	F80	Red Grid over voltage L1	1. Check If AC Voltage on Inverter AC terminals is in the following voltage range L-N(216-264V AC), L-L (374 457V AC) with help of multimeter 2. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
37	F81	Red Grid over voltage L2	
38	F82	Red Grid over voltage L3	
39	F83	Red Grid under voltage L1	
40	F84	Red Grid under voltage L2	
41	F85	Red Grid under voltage L3	
42	F86	Red Grid over current software L1	1. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
43	F87	Red Grid over current software L2	
44	F88	Red Grid over current software L3	
45	F89	Red over frequency	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 all 3 phases and Neutral and earth are correctly connected 5. Check if phase and neutral are correctly connected 6. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
46	F90	Red under frequency	
47	F91	Red RCMU fault	1. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.

7.3.2 Self Test Error Definitions*

Self Test Error Definitions			
Sr.No	**Self test error**	**Code**	**Suggestion**
1	No Error	0	
2	Com Error	1	1. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
3	FRC Error	2	1. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
4	PV Low	3	1. Turn OFF DC switch 2. Check PV voltage with multimeter 3. If voltage is less than 140V, Contact Selec Controls Pvt Ltd.
5	No Grid	4	1. Turn OFF DC switch 2. Check AC voltage on the inverter terminal with multimeter 3. Check AC wiring, whether any phase wire is swapped with Neutral or Earth 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
6	ADC Error	5	1. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
7	Earth Abs	6	1. Turn OFF DC switch 2. Check AC voltage on the inverter terminal with multimeter 3. Check AC wiring, whether any phase wire is swapped with Neutral or Earth 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
8	Ins Res Err	7	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.
9	Op Rly2 Err	8	1. Restart inverter, if error persists contact Selec Controls Pvt Ltd.
10	Op Rly1 Err	9	
11	PWM RLY ERR	10	
12	CT Abs Err	11	
13	EEPROM Err	12	
14	PV Unstable	13	
15	LN Swap Err	16	1. Turn OFF DC Switch. 2. Check AC Voltage on the inverter terminal with HMI 3. Check AC wiring, whether any Line wire is swapped with Neutral or Earth 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
16	LN-E Swap Err	17	
17	Freq Err	18	
18	AC Conn Err	19	
19	Wrong Grid Err	20	

Note: Table 10 is subject to change *

Table 10

7.3.3 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	

Note: Table 11 is subject to change *

Table 11

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^{0}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
- Unlock communication gland
- Remove RS485, 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

11.1 Three phase

RATINGS	3kW	5kW	6kW	7kW	7.5kW	8kW	10kW
Models	GTI0033PN401	GTI0053PN401 GTI0053PN402	GTI0063PN402	GTI0073PN402	GTI007X53PN402	GTI0083PN402	GTI0103PN402
INPUT SPECIFICATIONS (DC)							
Max. allowable PV power (kW)*	4.5	7.5	9	10.5	11.25	12	15
Nominal PV voltage (V)	600						
Max. DC input voltage (V)	1100						
Start-up voltage (V)	140						
Operating range (V)	120-1000						
MPPT voltage range (V)	120-1000						
Max input current per MPPT (A)	22	22 / 22+22	22+22				
Number of MPPT	1	1 / 2	2				
String per MPPT tracker	1						
Maximum PV short circuit current per MPPT (Isc)	30	30 / 30+30	30+30				
OUTPUT SPECIFICATIONS (AC)							
Rated output power (kW)	3	5	6	7	7.5	8	10
Max. AC power (kVA)	3.3	5.5	6.6	7.7	8.25	8.8	11
Nominal AC current, RMS (A)	4.16	6.94	8.33	9.72	10.41	11.11	13.88
Max. output current (A)	4.8	8	9.66	11.27	12.07	12.88	16
Grid voltage range (V)	216-264 / 374-457						
Grid frequency range (Hz)	50						
Power factor (at rated output power)	>0.99 (Adjustable from 0.8 leading to 0.8 lagging)						
Total harmonic distortion (THDi)	<3% at rated load						
Feed-in phase / Connection phase	3 phase, N, PE						
EFFICIENCY							
Max. efficiency (%)	98						
MPPT efficiency (%)	>99						
Euro efficiency (%)	97.5						
PROTECTIONS							
Surge protection	Type II SPD on AC and DC side						
Other protection	DC reverse polarity protection, Short circuit protection, Over current protection, Over voltage / Under voltage protection, Over frequency / Under frequency, Insulation resistance monitoring, Residual current detection, Surge protection, Anti-Islanding protection, Temperature protection						
Integrated DC switch	Yes						
Integrated AFCI (DC ARC-Fault circuit protection)	Optional						
INTERFACE							
DC connection	MC4 connectors						
Display	LCD with LED indication						
Datalogger & Communication	RS485 (default) / Wi-Fi / GSM (To be ordered along with inverter separately)						
Topology	Transformerless						
Consumption @ night (W)	<1						
Operating temperature range	-25 °C to +60 °C						
Cooling method	Natural convection						
Relative humidity	0 to 100% non-condensing						
Max. operational altitude	4000m						
Noise (dBA)	<30						

RATINGS	3kW	5kW	6kW	7kW	7.5kW	8kW	10kW
Models	GTI0033PN401	GTI0053PN401 / GTI0053PN402	GTI0063PN402	GTI0073PN402	GTI007X53PN402	GTI0083PN402	GTI0103PN402
Designed lifetime	<20 years						
Warranty**	7 years						
Ingress protection	IP65						
Dimensions in mm (W*H*D)	285x502x178						
Net weight (Kg)	12						
Mechanical integration	Wall mountable						
Safety	IS 16169 : 2019 / IEC 62116 : 2014, IS 16221 (part 2) : 2015 / IEC 62109-2 : 2011						
Environmental	IEC 60529						
Electrical	IS 17980 : 2022 / IEC 62891 : 2020, IEC 61000						

Note: Subject to max allowable MPPT voltage & PV current.*
If product is registered on app within 15 days of commissioning.**

11.2 Tightening torque required

AC terminal	0.5 Nm
Smart Meter & RS485 cover screw	0.2 Nm
Earthing screw	2 Nm

Table 12

11.3 Order code for accessories and variant

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 code
WiFi device	Communication interface	AC-S2W-GTI-2
GSM device	Communication interface	AC-S2G-2
3kW 5kW	Single MPPT inverter variants	GTI0033PN401 GTI0053PN401
5kW 6kW 7kW 7.5kW 8kW 10kW	Dual MPPT inverter variants	GTI0053PN402 GTI0063PN402 GTI0073PN402 GTI007X53PN402 GTI0083PN402 GTI0103PN402

Table 13

Selec Controls Pvt. Ltd.

Factory Address : Selec Controls Pvt. Ltd., EL-27/1 Electronic Zone,
TTC Industrial Area, MIDC Mahape, Navi Mumbai - 400710, India.
For Sales & Support, Mob. No. : +91-9136977315. Email: sales@selec.com | **www.selec.com**
For Service,Tel. No. : +91-7498077172 / +91-7400069545. Email: service@selec.com

Selec Subsidiaries: **Selec USA:** www.selec.com/us/en | **Selec GmbH:** www.selec-europe.com | **Selec Australia:** www.selec.com/au/en

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