

General Data		
Dimensions (W/H/D) in mm	500 x 500 x 200	500 x 500 x 200
Weight	26 kg	22 kg
Operating temperature range	-25°C to +60°C	-25°C to +60°C
Noise emission (typical)	< 30 dB	< 30 dB
Altitude	< 3000 m	< 3000 m
Self consumption at night	< 1W	< 1W
Topology	Transformer less	Transformer less
Cooling concept	Natural Convection	Natural Convection
Environment Protection Rating	IP65	IP65
Relative humidity	100.00%	100.00%
Pollution degree	Internal II, External III	Internal II, External III
Over voltage category	AC output III, DC input II	AC output III, DC input II
Safety class	Class 1, Metal enclosure with protective earth	Class 1, Metal enclosure with protective earth
Environmental category	Outdoor, wet location	Outdoor, wet location
Features		
DC connection	MC4	MC4
AC connection	Screw Terminal	Screw Terminal
Display	LCD (16 *2)	LCD (16 *2)
Interfaces: RS485	Yes	Yes
Warranty	5 years	5 years
Certificate and approvals	IS 16221-1 /-2, IS16169	IS 16221-1 /-2, IS16169

Table 10

10.1 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
Ethernet / Wifi cover screw	0.7 Nm

Table 11

10.2 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	GTI006WLM3PW
		GTI010WLM3PW
GPRS	Communication interface	GTI010WLM3PG
		GTI006WLM3PG

Table 12



SOLAR GRID TIE INVERTER (GTI - SERIES)

OPERATING INSTRUCTIONS

Selec Controls Pvt. Ltd.

EL-27/1 EL-27/1 PT, EL-27/2 EL-27/3, Electronic Zone, TTC Industrial Area, MIDC Mahape Nai Mumbai, Raigad, Maharashtra, 400710

Tel.: +91-22-4141 8468 / 452. Fax: +91-22-41418 408. Email: sales@selec.com | www.selec.com

Selec Subsidiaries: **Selec USA:** www.seleccusa.com | **Selec GmbH:** www.selec-europe.com | **Selec Australia:** www.selecaustralia.com

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- 1.4 Additional information

- 2. Product Overview**
- 2.1 Intended use of inverter
- 2.2 Inverter overview
- 2.3 Weight and dimensions
- 2.4 Type label
- 2.5 Symbols on the inverter
- 2.6 Transportation
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- 3. Safety instructions**
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- 4.1 Unpacking
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- 6. Electrical connections**
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- 8.1 Maintenance
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- 10. Technical Specification**
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10. Technical specifications

Model	GTI10kW	GTI06kW
Input Data		
Max. DC Power	12500W	7500W
Max. DC Voltage	1000Vdc	1000Vdc
Start Up Voltage	180Vdc	180Vdc
PV Voltage Range	160V-1000 Vdc	160V-1000 Vdc
MPP Voltage Range / DC Nominal Voltage	160-1000/630	160-1000/630
Max. PV Isc	16A	16A
Max. Input Current	2 * 11.6A	2 * 11.6A
Backfeed Current	0 A	0 A
Number of independent MPP trackers/ strings per MPP tracker	2/1	2/1
Output (AC)		
Rated AC Output Power	10kVA	6kVA
Max. AC apparent Power	11 kVA	6.6 kVA
Max. Output Current	16A*3	10 A*3
Nominal AC current	13.9*3A	8.33*3A
Nominal AC Voltage	3P/4W/PE,240/415V/50Hz	3P/4W/PE,240/415V/50Hz
Nominal AC Voltage range	320V - 480V	320V - 480V
AC grid frequency	50Hz	50Hz
AC grid frequency range	45Hz - 55Hz	45Hz - 55Hz
Inrush Current	<12A /1.6mS	<12A /1.6mS
Maximum output fault current	60A/100us	50A/100us
Maximum output overcurrent protection (RMS)	23.3A	23.3A
Power Factor at rated Power	>0.99	>0.99
Adjustable displacement Power Factor	0.8leading-0.8 lagging	0.8leading-0.8 lagging
THDi @ Full load & THDv	< 2 %	< 2 %
AC grid connection type	3 phase + N +E	3 phase + N +E
Efficiency		
Max. Efficiency	98.30%	98.30%
MPPT Efficiency	>99.5%	>99.5%
Protection Devices		
DC reverse polarity protection	Yes	Yes
DC switch for each MPPT	Yes	Yes
Output AC overcurrent protection	Yes	Yes
Output AC overvoltage protection	Yes	Yes
Output AC overvoltage protection -Varistor	Yes	Yes
Integrated all-pole sensitive leakage current monitoring unit	Yes	Yes

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.

8.2 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.

9. 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.

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

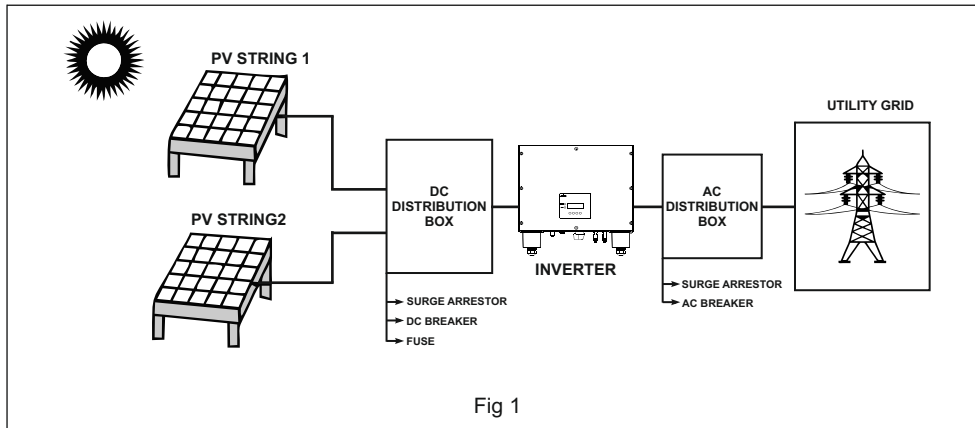
- Please refer to **www.selec.com** for the updated version of manual

2. Product Overview

2.1 Intended use of inverter

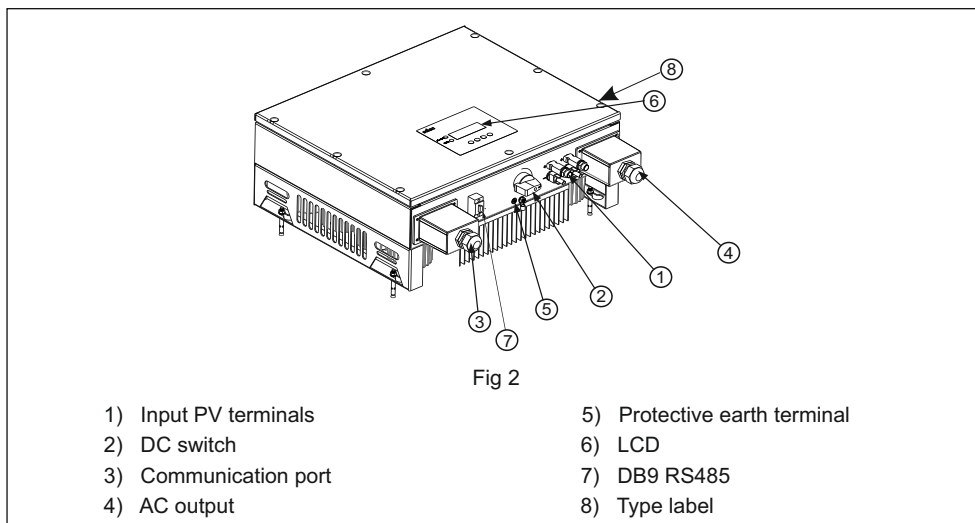
GTI-SERIES inverter are Grid Tied Solar Inverter. When sunrays fall upon the PV array, DC power is generated by these arrays. This power is fed to the inverter as input. Inverter will convert this DC power into AC power and feed it to three phase utility grid. **GTI-SERIES** are two string inverter with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

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



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



6.4.d) ADC Sensing Error Definitions

ADC Sensing Error Definitions			
Sr.No	Error Message	Error Description	Suggestion
1	ADC Sensing Err-PV1	PV1 Current Sensing Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
2	ADC Sensing Err-PV2	PV2 Current Sensing Error	
3	ADC Sensing Err-L1	Inverter L1-Phase Current Sensing Error	
4	ADC Sensing Err-L2	Inverter L2-Phase Current Sensing Error	
5	ADC Sensing Err-L3	Inverter L3-Phase Current Sensing Error	
6	ADC Sensing Err-BNTC	Boost Module NTC Sensing Error	
7	ADC Sensing Err-INTC	Inverter Module NTC Sensing Error	
8	ADC Sensing Err-CNTC	Main Controller NTC Sensing Error	

Table 9

7. 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.

7.1 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.

8. Maintenance and cleaning

8.1 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.

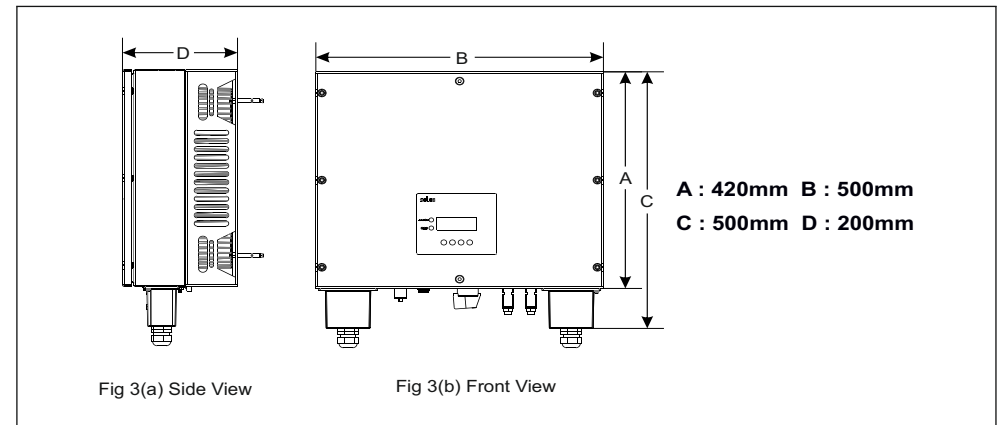
6.4.c) Self Test Error Definitions

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	FRC1 ERR	PWM FRC connection Error	
3	FRC2 ERR	ADC FRC connection Error	
4	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.
5	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.
6	GRID FREQ ERR	GRID Frequency Error	1.Turn OFF DC Switch. 2. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
7	ADC SENSING ERR	Current/NTC Sensing Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
8	EARTH ABS ERR	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.
9	AC CONN ERR	Line Neutral Swapped	1.Turn OFF DC Switch. 2.Check AC wiring, whether any Line wire is swapped with Neutral or ground. 3.Check Earthing connection. 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
10	WRONG GRID ERR	GRID Voltage Out of Range	1.Turn OFF DC Switch & Turn off AC supply. 2.Check AC wiring, whether any Line wire is swapped with Neutral or ground. 3.Check Earthing connection. 4. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
11	INS RES 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.
12	OUTPUT RLY2 ERR	Output Relay2 Error	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
13	OUTPUT RLY1 ERR	Output Relay1 Error	
14	ENABLE PINS ERR	Control Enable Pin Error	
15	RCMU CT ERR	RCMU CT Detection Error	
16	MEMORY ERR	EEPROM memory log error	
17	PV1 UNSTABLE ERROR	PV1 UNSTABLE ERROR	1.Check PV connection & voltage 2.If PV voltage variation greater than 15V then check grounding of system
18	PV2 UNSTABLE ERROR	PV2 UNSTABLE ERROR	

Table 8

2.3 Weight and dimensions

1) Weight of the Inverter is 26 Kilogram.



2.4 Type label

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 : GTI 06kW
Reference ID : GTI006WLM3PW

DC Input Range : 160-1000 VDC
Max. DC Voltage : 1000 VDC
MPPT Voltage Range : 160-1000 VDC
Max. Input Current : 2*11.6 A
Isc PV (Absolute maximum)
DC per MPPT : 16A

AC Output : 240/415 VAC, 50Hz
3P/4W/PE, cosφ 0.8lag-0.8lead
Max. Output current : 3*10 A
Apparent Power :
6kVA nom, 6.6kVA max

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

IS16221-1&2
IS16169

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 Nai Mumbai, Raigad,
Maharashtra, 400710

selec
PV GRID INVERTER
Model : GTI 10kW
Reference ID : GTI10WLM3PW

DC Input Range : 160-1000 VDC
Max. DC Voltage : 1000 VDC
MPPT Voltage Range : 160-1000 VDC
Max. Input Current : 2*11.6 A
Isc PV (Absolute maximum)
DC per MPPT : 16A

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

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

IS16221-1&2
IS16169

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 Nai Mumbai, Raigad,
Maharashtra, 400710

2.5 Symbol 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.

6.4.b) Error Definations

Error Definitions			
Sr.No	Error Message	Error Description	Suggestion
1	INS RES	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	COMM	Internal Communication Error	Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
4	EARTH	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.
5	CNTR NTC	Controller Temperature Out of Range	1.Check ambient temperature. 2.Check installation enviornment. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
6	TEMPERATURE CNTR	Main/Redundant Controller Temperature Out of Range	
7	TEMPERATURE BOOST	Boost Temperature Out of Range	
8	TEMPERATURE INV	Inverter Temperature Out of Range	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
9	OVER CURRENT PV1	Boost1/PV1 Over Current	
10	OVER CURRENT PV2	Boost2/PV2 Over Current	
11	OVER CURRENT L1	Inverter L1-Phase Over Current	
12	OVER CURRENT L2	Inverter L2-Phase Over Current	
13	OVER CURRENT L3	Inverter L3-Phase Over Current	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter 3.If voltage is lower than 1000V,contact Selec Control Pvt Ltd.
14	OVER VOLTAGE PV1	Boost1/PV1 High Voltage	
15	OVER VOLTAGE PV2	Boost2/PV2 High Voltage	
16	OVER VOLTAGE L1	Inverter L1-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.
17	OVER VOLTAGE L2	Inverter L2-Phase Over Voltage	
18	OVER VOLTAGE L3	Inverter L3-Phase Over Voltage	
19	UNDER VOLTAGE PV1	Inverter L3-Phase Over Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter. 3.If voltage is more than 200V,contact Selec Controls Pvt Ltd.
20	UNDER VOLTAGE PV2	Boost2/PV2 Low Voltage	
21	UNDER VOLTAGE L1	Inverter L1-Phase Under Voltage	
22	UNDER VOLTAGE L2	Inverter L2-Phase Under Voltage	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.
23	UNDER VOLTAGE L3	Inverter L3-Phase Under Voltage	
24	DC BUS UV	DC Bus Low Voltage	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
25	DC BUS OV	DC Bus Over Voltage	
26	DC BUS UB	DC Bus Unbalance	
27	GRID 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.
28	GRID FREQ UF	Grid Frequency Low	

Table 7

6.4 Troubleshooting

6.4.a) Log Variable Data

Log Variables Data			
Sr.No	Log Code	Log Description	Suggestion
1	OV L1	L1-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	OV L2	L2-Phase Over Voltage	
3	OV L3	L3-Phase Over Voltage	
4	UV L1	L1-Phase Under Voltage	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	UV L2	L2-Phase Under Voltage	
6	UV L3	L3-Phase Under Voltage	
7	OC L1	L1-Phase Over Current	1.Disturbance in AC Voltage. 2.Surge Occurs during operation. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
8	OC L2	L2-Phase Over Current	
9	OC L3	L3-Phase Over Current	
10	VEN HIGH	Earth Voltage 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.
11	FREQ H	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.
12	FREQ L	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.
13	INS RES	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.
14	RCMU	Inverter Residual Current Out of Range	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
15	DUTY	Inverter Duty Out of Range	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
16	MC NTC	Main Controller Temperature Out of Range	1.Check ambient temperature. 2.Check installation environment. 3.If error persists contact Selec Controls Pvt Ltd.
17	INV NTC	Inverter Module Temperature Out of Range	
18	BST NTC	Boost module Temperature Out of Range	
19	RC NTC	Redundant Controller Temperature Out of Range	
20	PV1 OV	PV1 High Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multimeter 3.If voltage is lower than 1000V,contact Selec Controls Pvt Ltd.
21	PV2 OV	PV2 High Voltage	
22	PV1 UV	PV1 Low Voltage	1.Turn OFF DC Switch. 2.Check PV voltage with Multi meter 3.If voltage is more than 180V,contact Selec Controls Pvt Ltd.
23	PV2 UV	PV2 Low Voltage	
24	PV1 OC	PV1 Over Current	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
25	PV2 OC	PV2 Over Current	
26	BUS OV	DC Bus Over Voltage	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.
27	BUS UB	DC Bus Unbalance	
28	BUS UV	DC Bus Low Voltage	

Table 6

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.

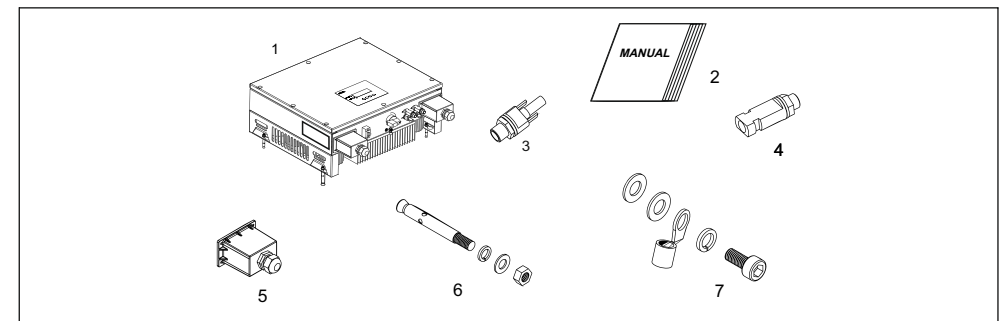


Fig 4

Item	Quantity	Description
1	1	Inverter
2	1	User Manual
3	2	PV male connector
4	2	PV female connector
5	2	Cable gland for AC and communication output
6	4	Wall mount anchor bolt
7	1	Earth allen screw with 2 plane & 1 spring washer with lug

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 26 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.

6.3.3.2 Monitor inverter status.

a) Monitor single inverter's status with RS485

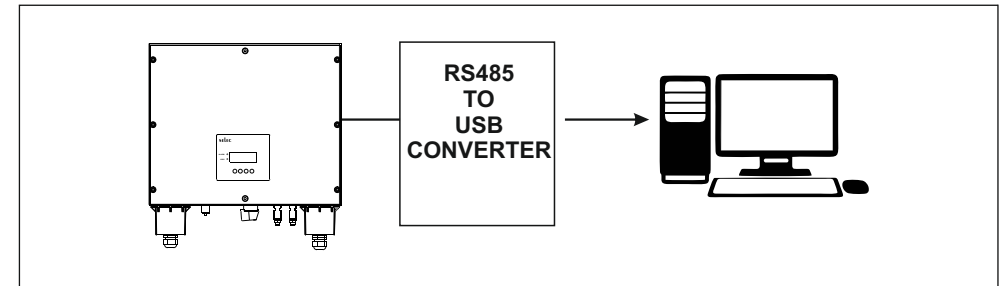


Fig.19

b) Monitor multiple inverters with RS485

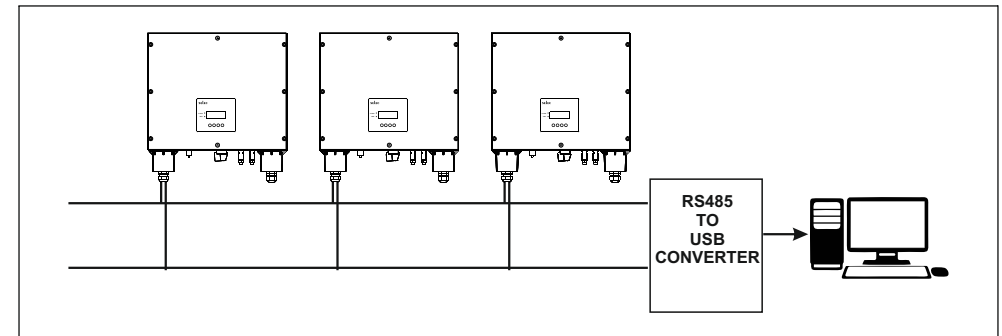


Fig.20

c) Monitor Inverter with External wireless device

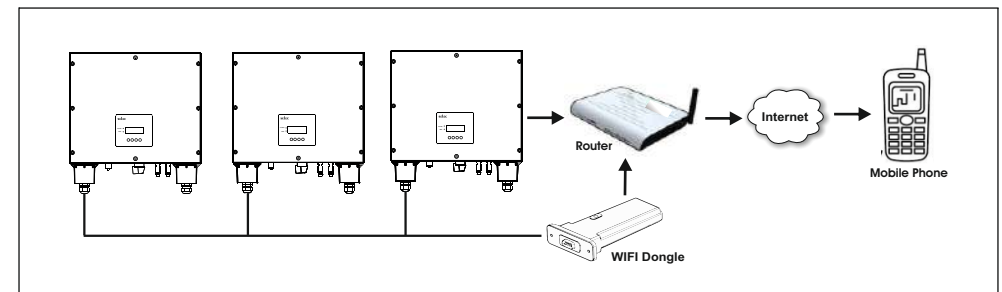
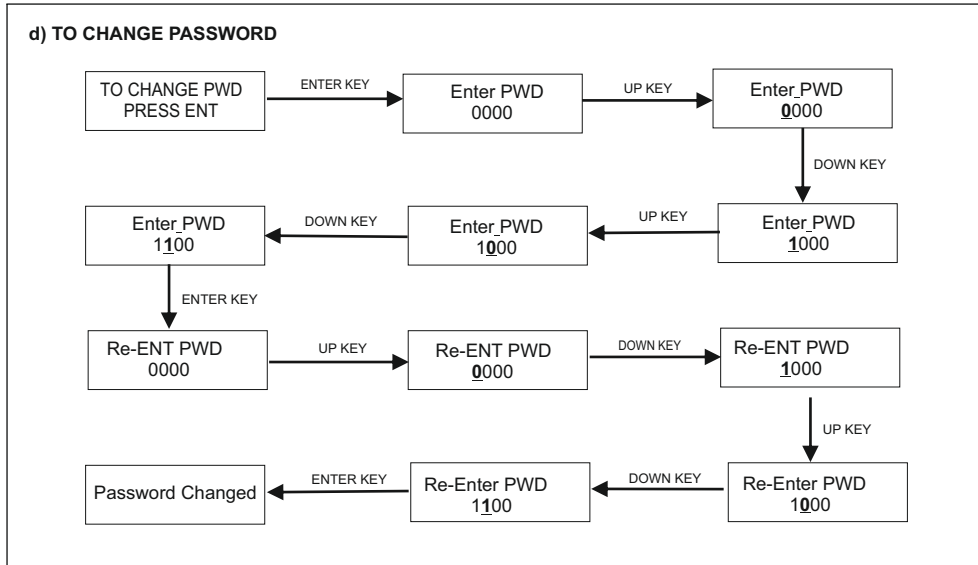


Fig. 21



NOTE : 1) Press UP key to scroll around digits.
2) Press DOWN key to change digits.

6.3.3 Communication module connections

6.3.3.1 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 : 115200
Data bits : 8
Stop bit : 2
Parity : N/A

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.

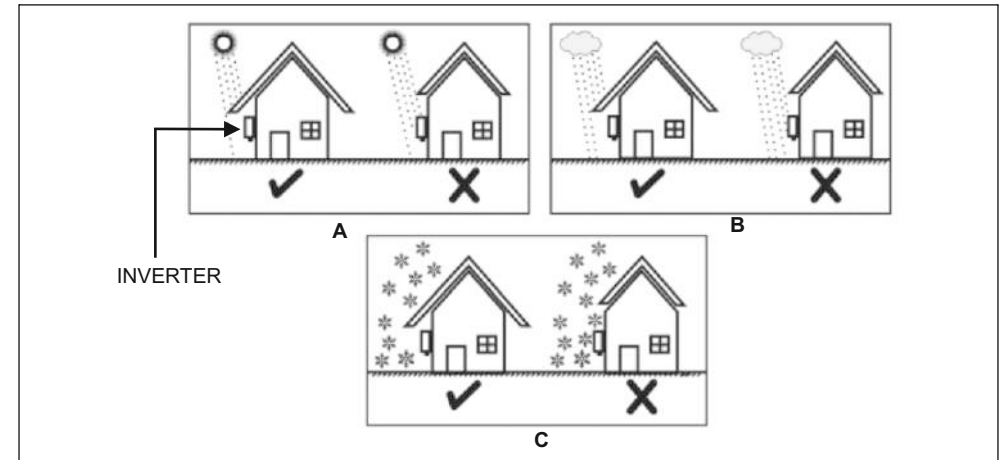


Fig 5

Ideal installing position shown in fig 6. -

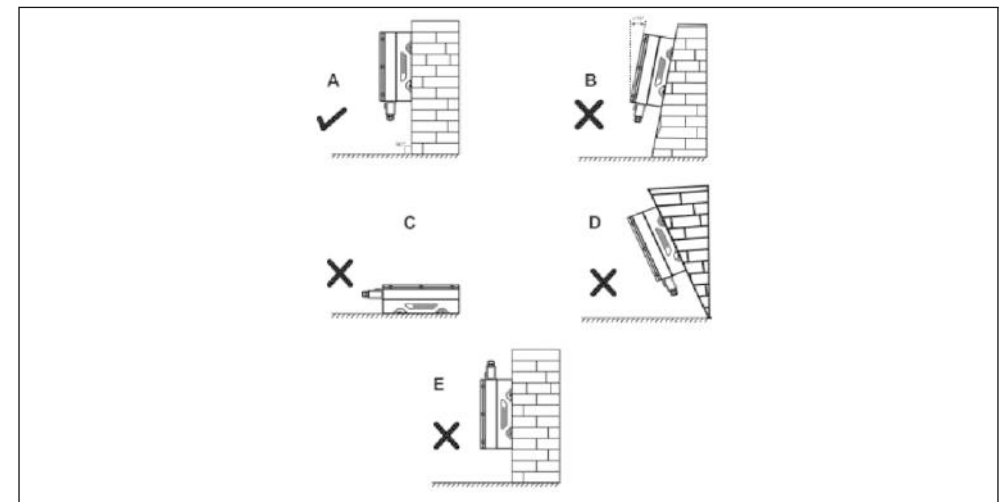


Fig 6

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.

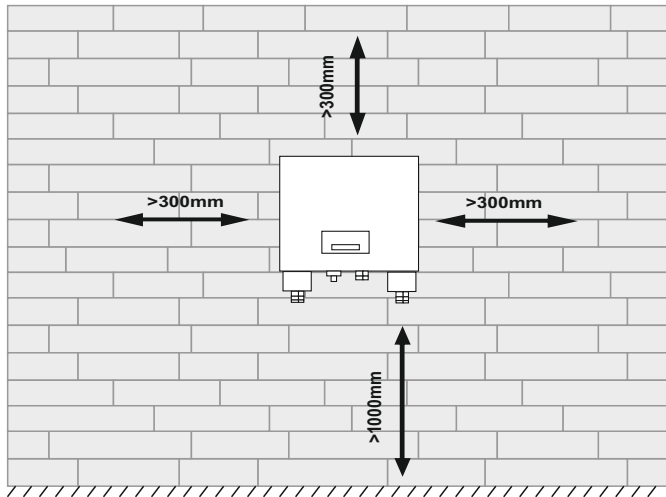


Fig 7

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.

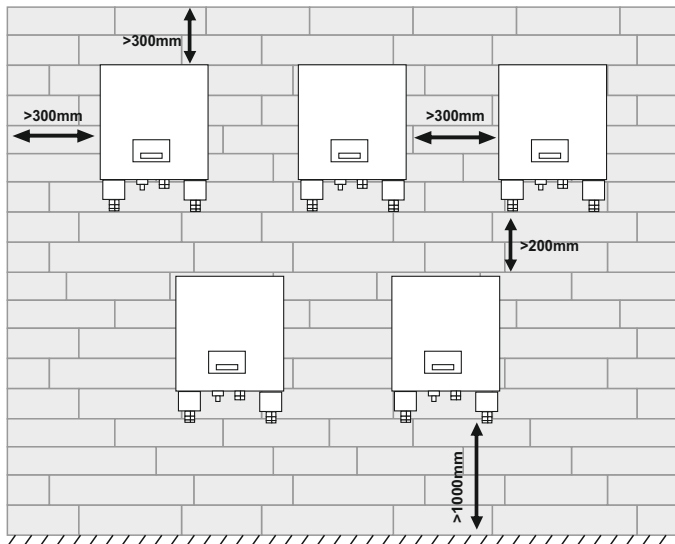
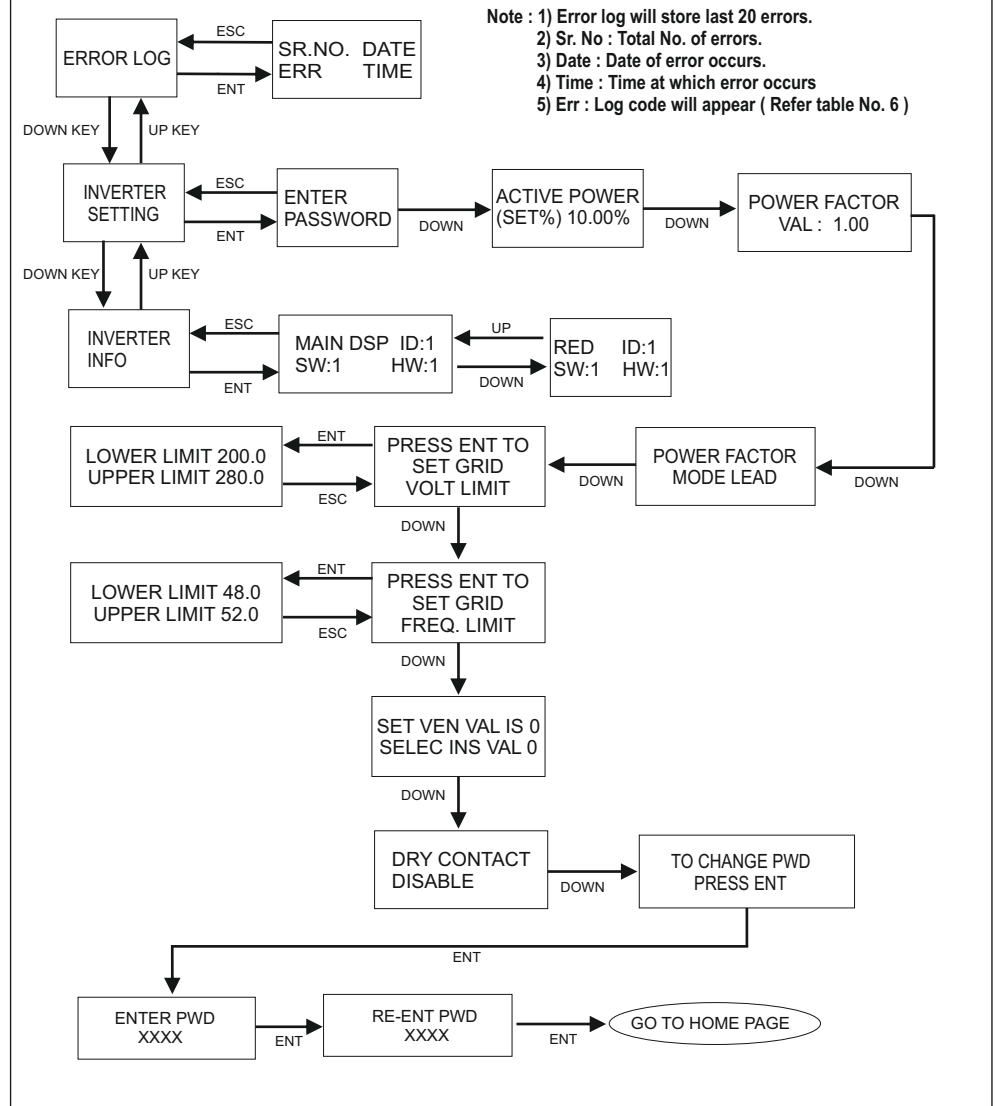
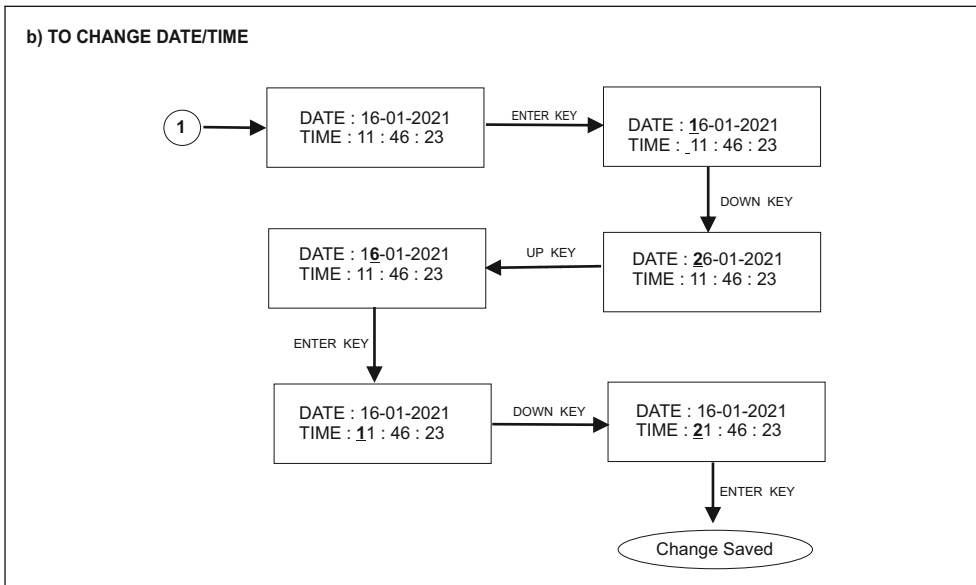
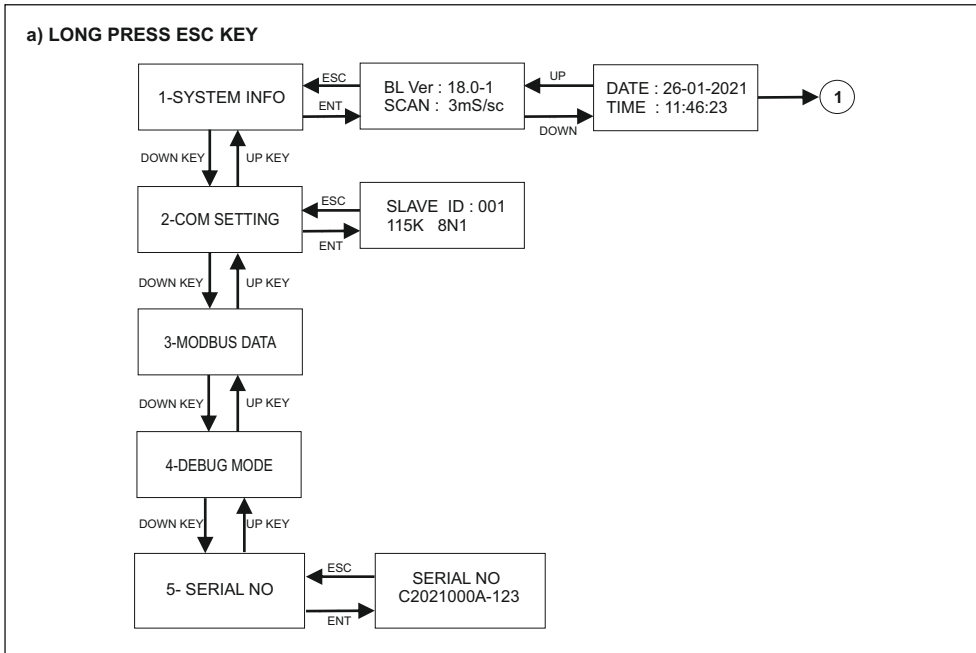


Fig 8

c) LONG PRESS UP KEY



6.3.2.1 LCD KEY FUNCTIONALITY



NOTE : 1) Press UP key to scroll around digit.
2) Press DOWN key to change digit.

5.2.2 Mounting inverter on wall:

Steps to mount inverter

Step1 : Drill four holes on wall at distance of inverter mounting position as shown in fig.9 & insert anchor bolt in holes.

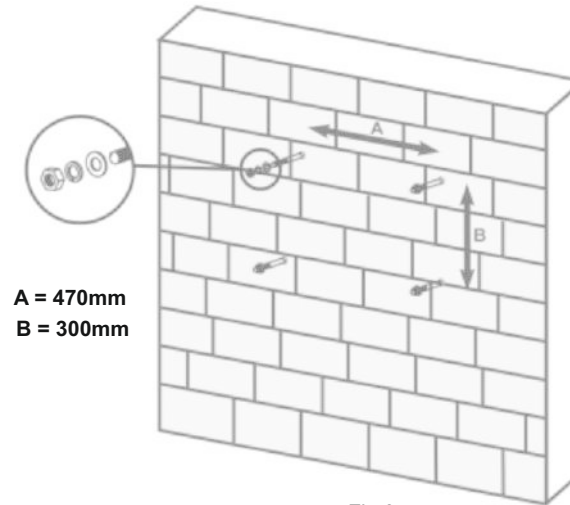


Fig 9

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

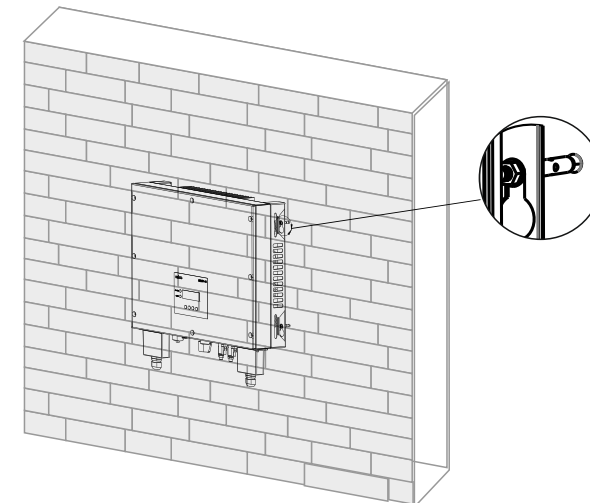


Fig 10

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.

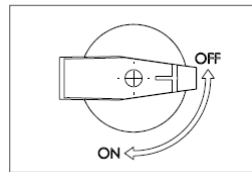


Fig 11

Warning



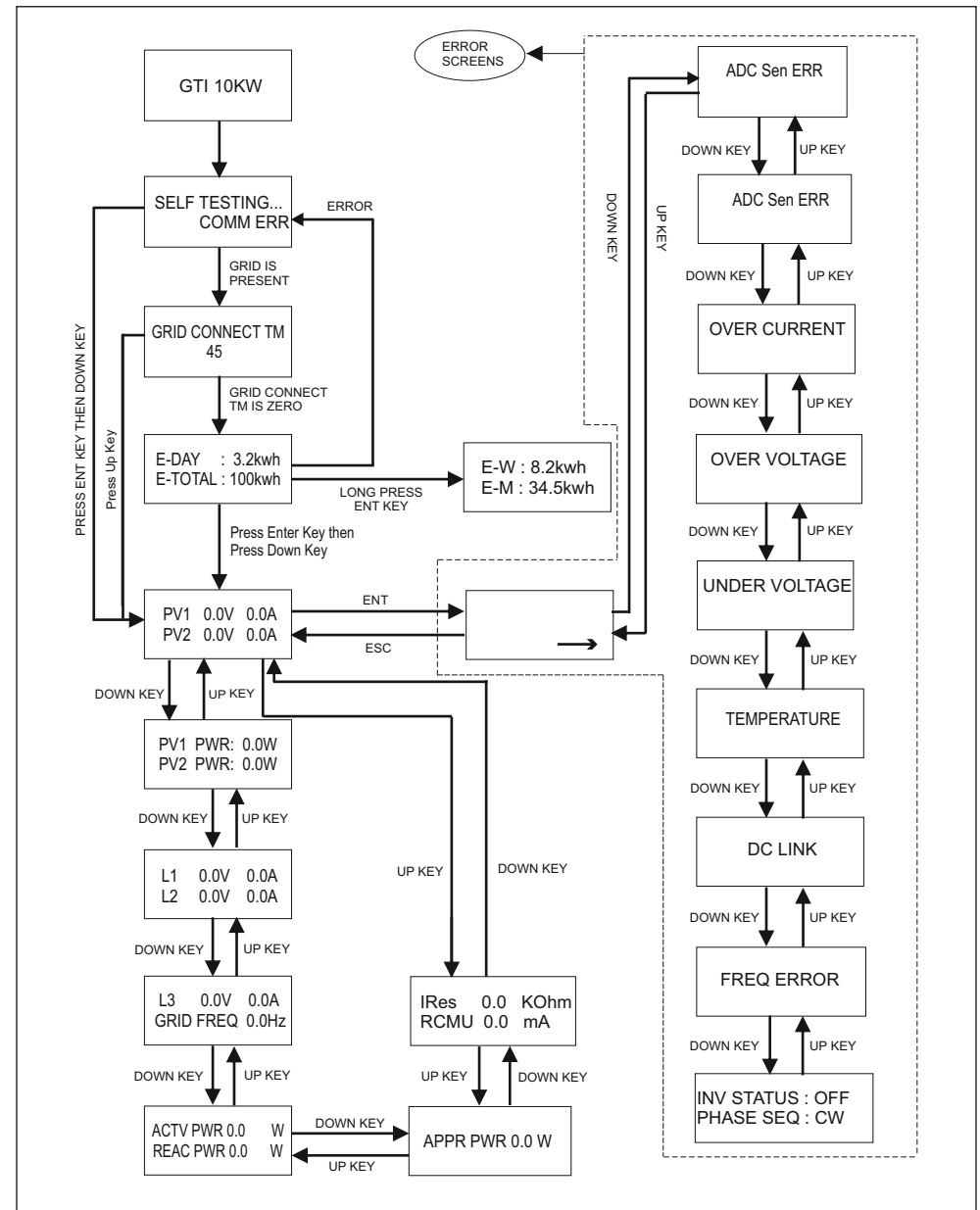
- Whenever a PV array is exposed to sunlight it supplies DC Voltage. Shock hazard may occurs if terminals are open. Cover PV array with opaque material before commencing any wiring.
- Ensure string's open circuit voltage should be less than inverter's maximum input voltage. Applying more voltage can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

6.1. DC Connection to inverter :

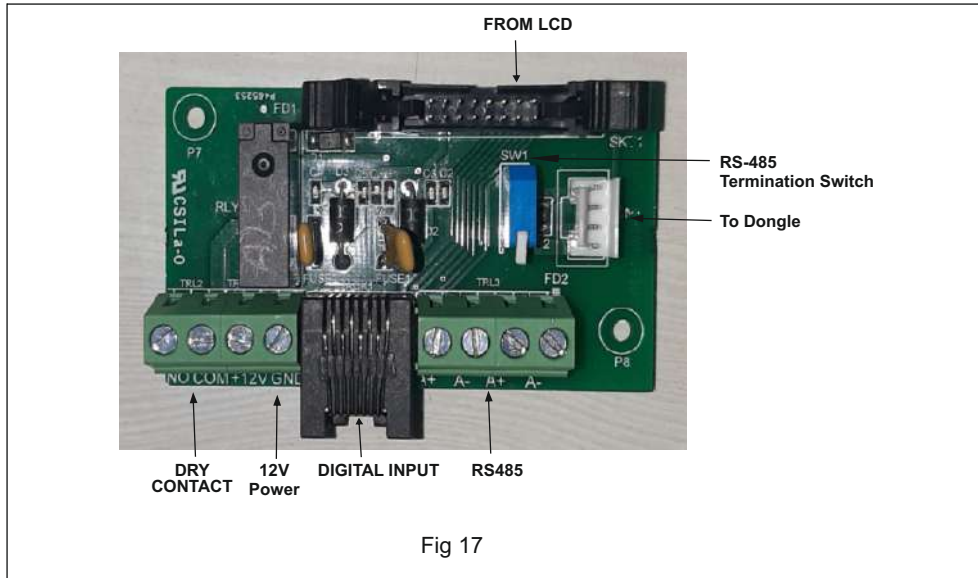
Model	Current Rating	Wire Size
GTI 10kW	11.6A	4 sq.mm
GTI 06kW	11.6A	4 sq.mm

- 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.

6.3.2 LCD Flow Chart



NOTE:- 1) Error will be visible on screen when they occur. (Refer table no. 7 for Error Definition).
 2) When system is on & any self test error occurs screen will jump to self testing page.
 3) Use_Esc key to go on Home page.



6.3.1 LCD KEY ANNOTATIONS

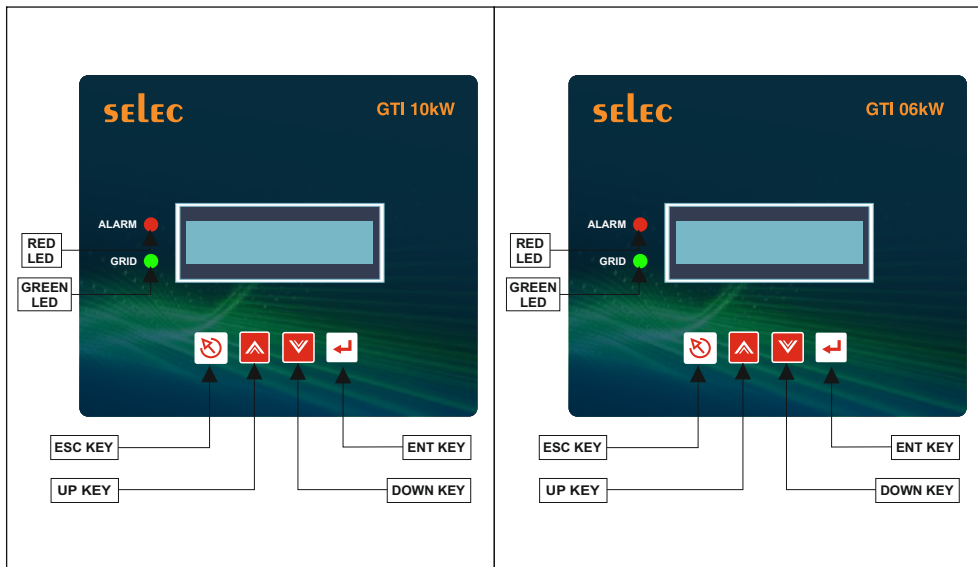


Fig 18

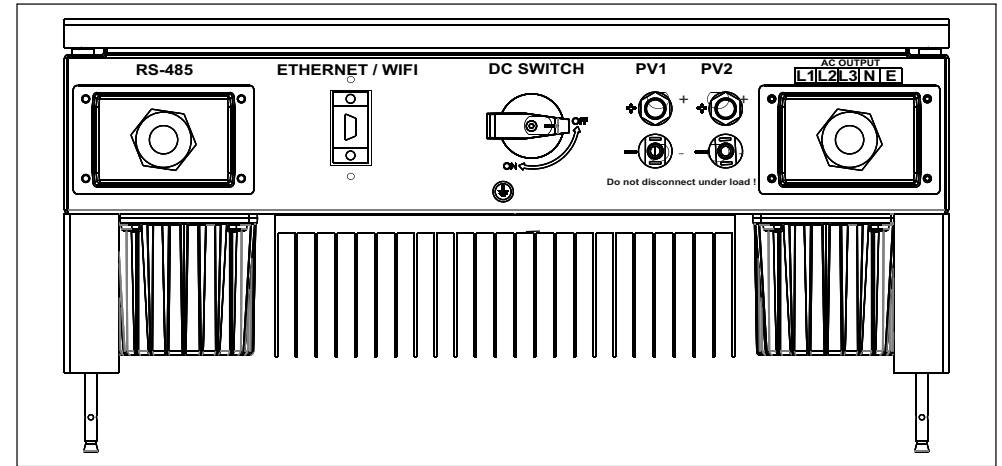


Fig 12

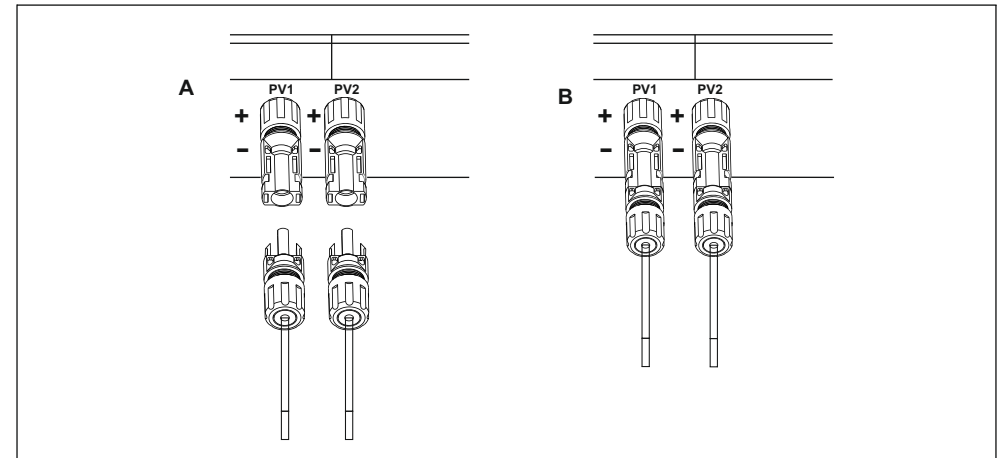


Fig 13

6.2 AC Connections

Caution



- For the purpose of over current protection use circuit breaker between inverter & utility grid. Use 20A 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-built 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
GTI10kW	16A	2.5 or 4 sq.mm
GTI06kW	10A	2.5 sq.mm

- 1) Use 5 core AC cables of 4 sq.mm size for AC connection.
- 2) Strip AC wires and put lugs using crimping tool, it will ensure no wire strands are open & avoid accidental shorting of two wire.
- 3) Put these wires in AC Connector Board & screw it tightly.
- 4) Fig 14(a) shows labels for AC connections.
- 5) Insert 5 core wire through gland and cover as shown in fig 14 (b).
- 6) Make connections as shown in Fig 14 (c).
- 7) Tighten the cover and gland properly as shown in fig 14 (d).

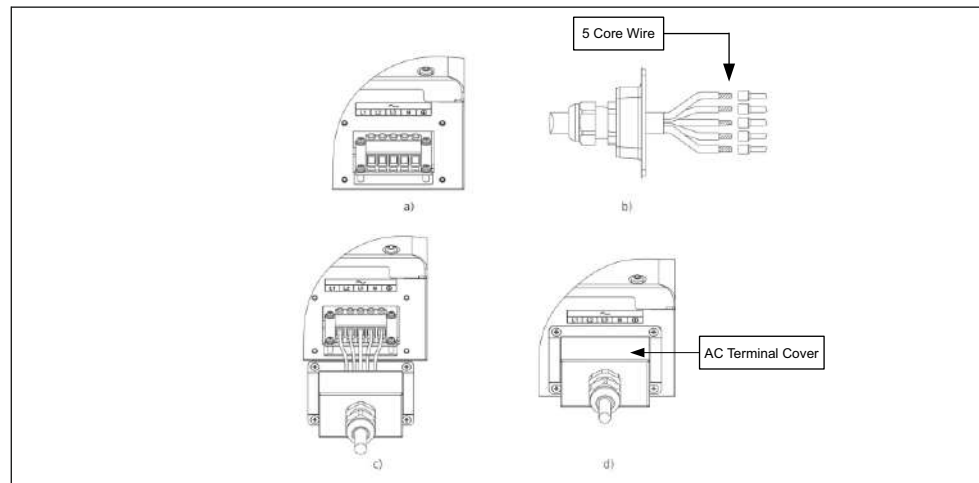


Fig 14

6.2.2 Grid type

Based on local grid standard there are different types of Grid connections available.

Compatibility of GTI-SERIES inverter for various types of Grid connections is shown in fig 15.

- GTI Series inverters support 3 phase 4 wire PE (3 -phase, N, PE) & 3 phase 3 wire (3 -phase PE).

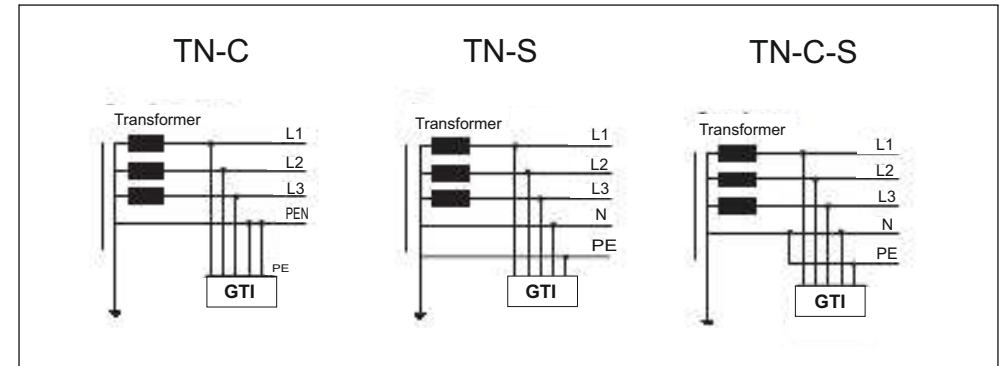


Fig 15

6.2.3 AC Grounding

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

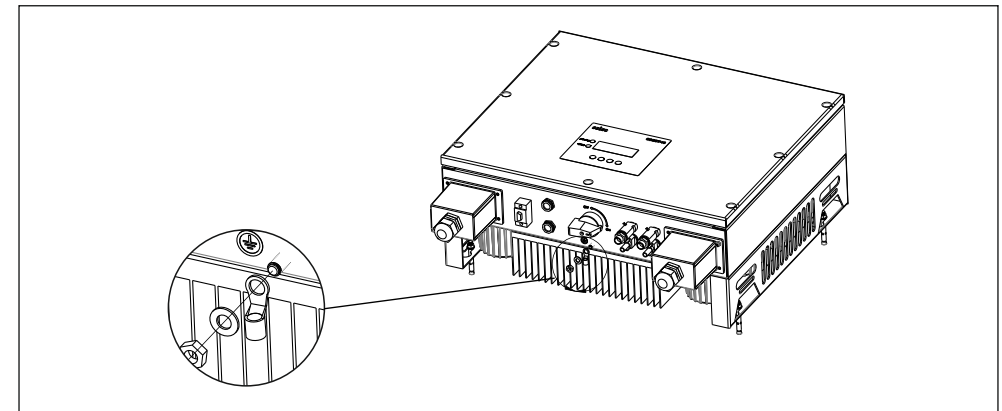


Fig 16

6.3 Communication module

GTI-SERIES inverter's Communication boards have RS-485, Dry contact & I/O connection (Digital input) terminals as shown in fig 17.