



# SOLAR GRID TIE INVERTER (GTI - SERIES)

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

# **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 Nai Mumbai, Raigad, Maharashtra, 400710 Tel.:+91-22-4141 8468 / 452. Fax: +91-22-41418 408. Email: sales@selec.com | www.selec.com

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www.selec.com 3060-Version 0.1 | MAR | 2023

General Data	GTI001WLM1PW	GTI002WLM1PW	GTI003WLM1PW
Dimensions (W/H/D) in mm	275 x 313 x 131	275 x 313 x 131	275 x 313 x 131
Weight	5.2 kg	5.2 kg	5.2 kg
Operating temperature range	-25°C to +60°C	-25°C to +60°C	-25°C to +60°C
Noise emission (typical)	< 25 dB	< 25 dB	< 25 dB
Altitude	< 4000 m	< 4000 m	< 4000 m
Self consumption at night	< 0.5W	< 0.5W	< 0.5W
Topology	Transformer less	Transformer less	Transformer less
Cooling concept	Natural Convection	Natural Convection	Natural Convection
Environment Protection Rating	IP65	IP65	IP65
Relative humidity	0 to 100%	0 to 100%	0 to 100%
Pollution degree	Internal II, External III	Internal II, External III	Internal II, External III
Over voltage category	AC output III, DC input II	AC output III, DC input II	AC output III, DC input II
Safety class	Plastic enclosure with protective earth	Plastic enclosure with protective earth	Plastic enclosure with protective earth
Environmental category	Outdoor, wet location	Outdoor, wet location	Outdoor, wet location
Features			
DC connection	MC4	MC4	MC4
AC connection	Screw Terminal	Screw Terminal	Screw Terminal
Display	LCD (8 *2)	LCD (8 *2)	LCD (8 *2)
Interfaces: RS485 / WiFi GPRS	Yes / Optional	Yes / Optional	Yes / Optional
Warranty	5 years	5 years	5 years
Certificate and approvals	IS 16221-1 /-2, IS16169	IS 16221-1 /-2, IS16169	IS 16221-1 /-2, IS16169

Table 10

# 11.1 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

Table 11

# 11.2 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.

Naı	me	Description	Selec Order no.
WiF	-i	Communication interface	GTI001WLM1PW / GTI002WLM1PW / GTI003WLM1PW
GP	RS	Communication interface	GTI001WLM1PG / GTI002WLM1PG / GTI003WLM1PG

Table 12

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# 11. Technical specifications

Model	GTI001WLM1PW	GTI002WLM1PW	GTI003WLM1PW	
Input Data				
Max. DC Power	2100W	3500W	4200W	
Max. DC Voltage	550 VDC	550 VDC	550 VDC	
Start Up Voltage	80 VDC	80 VDC	80 VDC	
PV Voltage Range	65 - 550 VDC	65 - 550 VDC	65 - 550 VDC	
MPP Voltage Range / DC Nominal Voltage	65 - 550/360	65 - 550/360	65 - 550/360	
Max. PV Isc	16A	16A	16A	
Max. Input Current	13A	13A	13A	
Backfeed Current	0 A	0 A	0 A	
Number of independent MPP trackers/ strings per MPP tracker	1	1	1	
Output (AC)				
Rated AC Output Power	1.5 kVA	2.5 kVA	3.3 kVA	
Max. AC apparent Power	1.5 kVA	2.5 kVA	3.3 kVA	
Max.Output Current	7.1A	11.9A	16A	
Nominal AC current	13.75	13.75	13.75	
Nominal AC Voltage	1P/2W/PE,240/50Hz	1P/2W/PE,240/50Hz	1P/2W/PE,240/50Hz	
Nominal AC Voltage range	180V ~ 280V	180V ~ 280V	180V ~ 280V	
AC grid frequency	50Hz	50Hz	50Hz	
AC grid frequency range	45Hz - 55Hz	45Hz - 55Hz	45Hz - 55Hz	
Inrush Current	<10A /1.6mS	<10A /1.6mS	<10A /1.6mS	
Maximum output fault current	60A/100us	60A/100us	60A/100us	
Maximum output overcurrent protection (RMS)	16A	16A	16A	
Power Factor at rated Power	>0.99	>0.99	>0.99	
Adjustable displacement Power Factor	0.8leading- 0.8 lagging	0.8leading- 0.8 lagging	0.8leading- 0.8 lagging	
THDi @ Full load	< 3 %	< 3 %	< 3 %	
AC grid connection type	Single phase + N +E	Single phase + N +E	Single phase + N +E	
Efficiency				
Max. Efficiency	97.40%	97.40%	97.40%	
MPPT Efficiency	>99.5%	>99.5%	>99.5%	
Protection Devices				
DC reverse polarity protection	Yes	Yes	Yes	
DC switch for each MPPT	Yes	Yes	Yes	
Output AC overcurrent protection	Yes	Yes	Yes	
Output AC over & under frequency protection	Yes	Yes	Yes	
Output AC over & under voltage protection	Yes	Yes	Yes	
Integrated all-pole sensitive leakage current monitoring unit & short circuit protection	Yes	Yes	Yes	
Anti Islanding & Insulation Resistance protection	Yes	Yes	Yes	

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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 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

#### 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

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#### 7.3 (D) ADC Sensing Error Definitions

	ADC Sensing Error Definitions			
Sr.No	No Error Message Error Description Suggestion			
1	ADC IPV	PV Current Sensing Error		
2	ADC IPH	Inverter-Phase Current Sensing Error  1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.		
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 alram & 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.

#### 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:

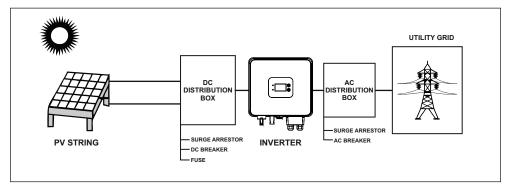


Fig 1

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

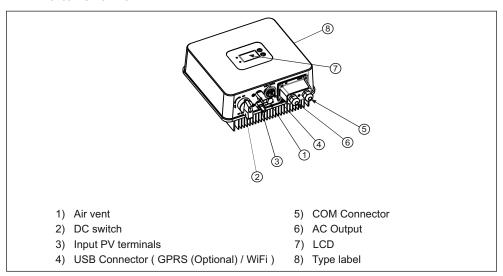
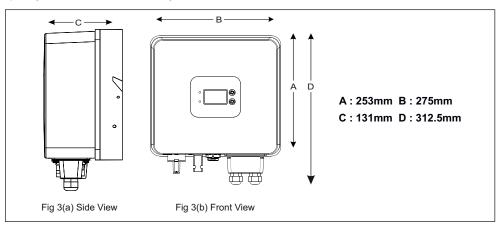


Fig 2

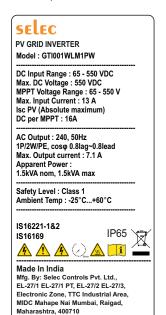
# 2.3 Weight and dimensions

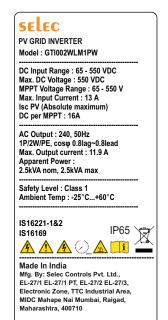
1) Weight of the Inverter is 5.2 Kilogram

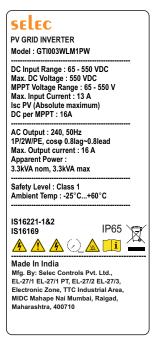


# 2.4 Type label

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







#### 7.3 (C) Self Test Error Definitions

	Self Test Error Definitions			
Sr.No	Sr.No Error Message Error Description		Suggestion	
1	COMM ERR	Internal Communication Error	Restart Inverter, if error persists contact	
2	FRC ERR	PWM & ADC FRC connection Error	Selec Controls Pvt Ltd.	
3	PV LOW ERR	PV low voltage	Turn OFF DC Switch.     Check PV voltage with Multimeter.     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	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		
9	RI1 ERR	Output Relay1 Error		
10	ENBL PIN	Control Enable Pin Error	Restart Inverter, if error persists contact     Selec Controls Pvt Ltd.	
11	CT ABS	CT Detection Error		
12	EPRM ERR	EEPROM memory log error		
13	PV UNSB	PV UNSTABLE ERROR	1.Check PV connection & voltage     2.If PV voltage variation greater than 15V then check grounding of system	

Table 8

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# 7.3 (B) Error Definations (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 enviorment. 3.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.		
5	PV OC	Boost/PV Over Current	Restart Inverter, if error persists contact		
6	LINE OC	Inverter-Phase Over Current	Selec Controls Pvt Ltd.		
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.		
15	FREQ UF	Grid Frequency Low	2.Check AC frequency on the inverter terminal.     3. Restart Inverter, if error persists contact Selec Controls Pvt Ltd.		

Table 7

# 2.5 Symbol on the Inverter

Symbol	Description	
4	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.	
<u> </u>	Read the manual before installing GTI-SERIES Inverters.	
A	Do not dispose this inverter with household waste.	
Œ	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.

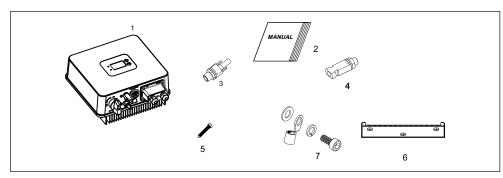


Fig 4

# 7.3 Troubleshooting

# 7.3 (A) Logged error defination

	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		
10	INV T	Inverter Module Temperature Out of Range	1.Check ambient temperature.	
11	BST NTC	Boost module Temperature Out of Range	2.Check installation environment.     3.If error persists contact Selec Controls Pvt Ltd.	
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		
16	BV OV	DC Bus Over Voltage	1.Restart Inverter, if error persists contact Selec Controls Pvt Ltd.	
17	BV UV	DC Bus Low Voltage		

Table 6

#### 7.2.2 Monitor inverter status.

# a) Monitor single inverter's status with RS485

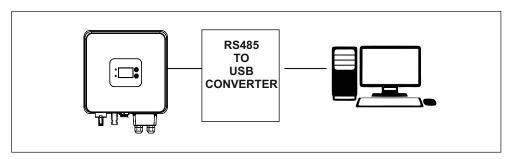


Fig.24

# b) Monitor multiple inverters with RS485

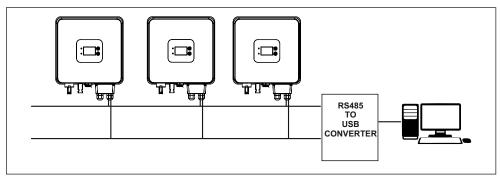


Fig.25

# c) Monitor Inverter with External wireless device

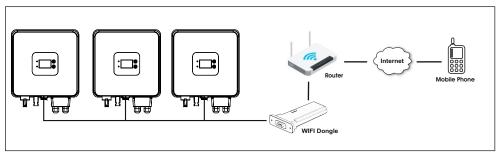


Fig. 26

#### Quantity Description Item 1 Inverter 2 1 User Manual 3 1 PV male connector PV female connector 4 1 5 3 Self tapping screw Wall mounting plate 6 1 7 Washer (1 Plain 1 Spring), lug and screw 1 8 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.

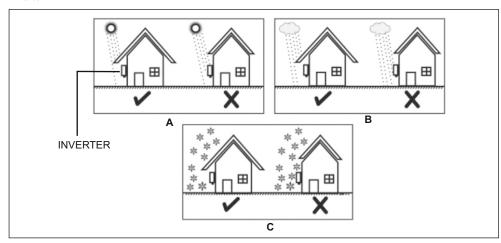


Fig 5

Ideal installing position shown in fig 6. -

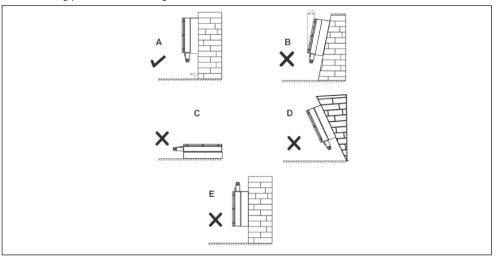


Fig 6

#### NOTICE

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- · 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.

# 7.2 Communication Module Connections

# 7.2.1 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

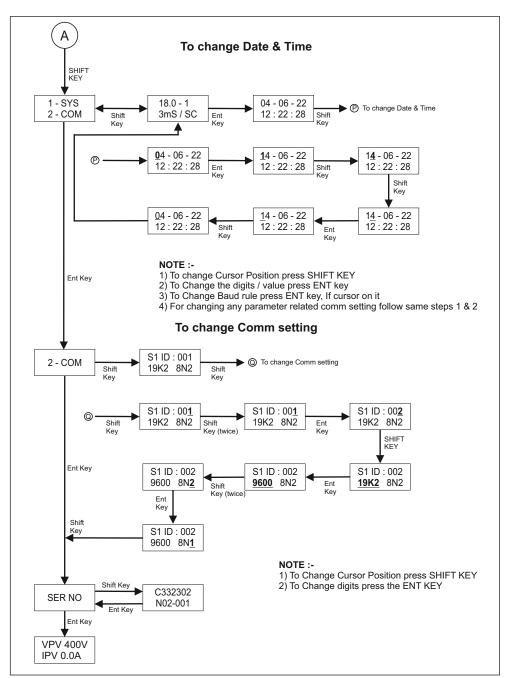
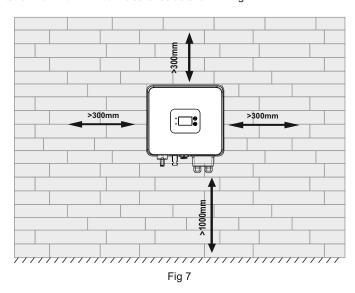


Fig 23

#### 5.2.1 Clearance for installation

Install inverter on wall with minimum clearence as shown in 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.

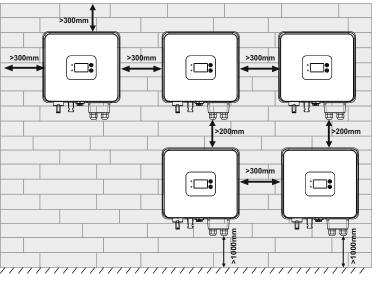
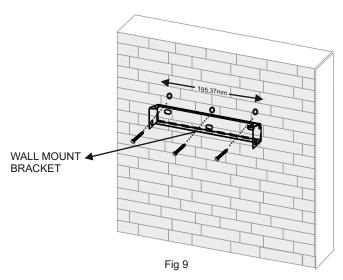


Fig 8

# 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.



**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.

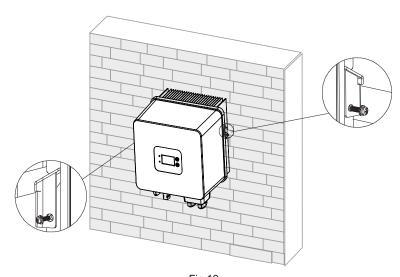


Fig 10

# 7.1.6 (C) Power Export Control

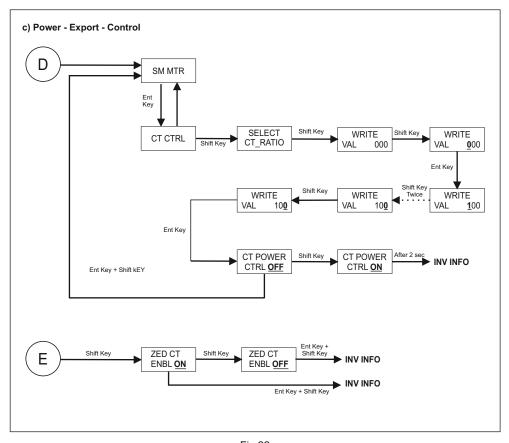
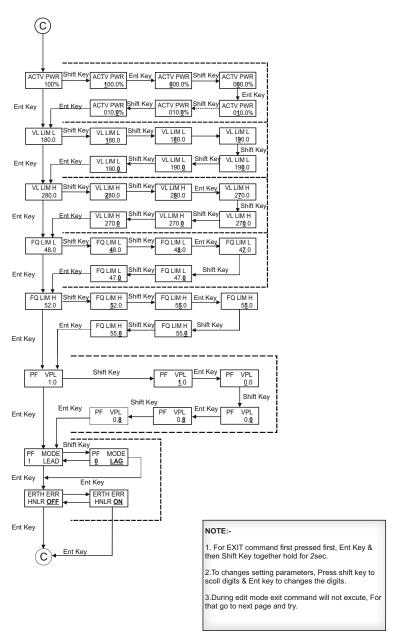


Fig 22

### 7.1.5 (B) LCD KEY FUNCTIONALITY

#### b) INV Setting



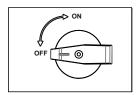
# 6. Electrical connections

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
GTI001WLM1PW	13A	2.5 sq.mm
GTI002WLM1PW	13A	2.5 sq.mm
GTI003WLM1PW	13A	2.5 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.

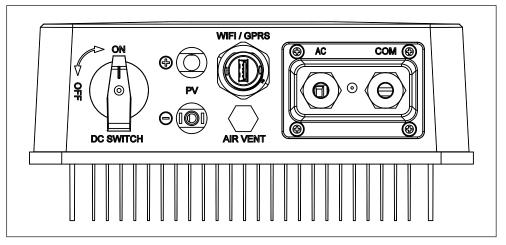


Fig 12

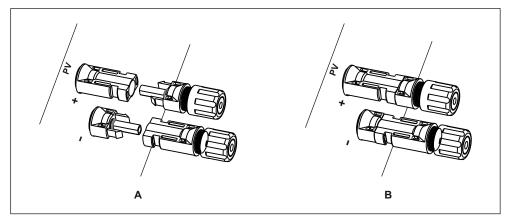


Fig 13

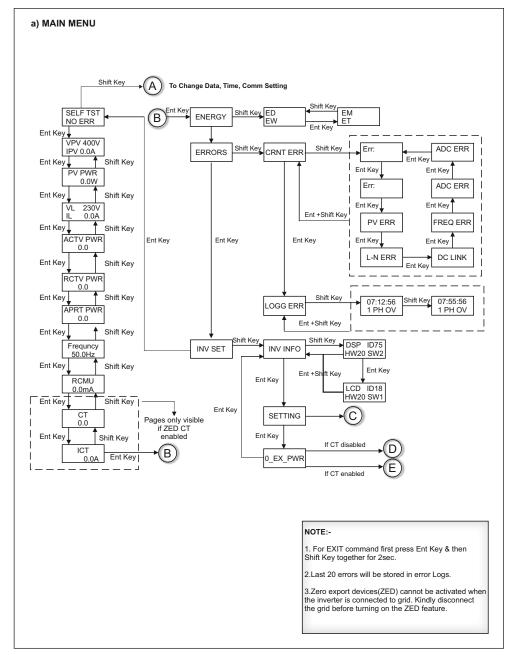
# 6.2 AC Connections

#### 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.

# 7.1.4 (A) LCD Flow Chart



# 7.1.2 AC Grounding

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

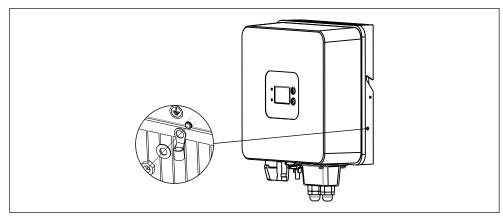


Fig 18

#### 7.1.3 LCD KEY ANNOTATIONS



Fig 19

# 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
GTI001WLM1PW	16A	2.5 sq.mm
GTI002WLM1PW	16A	2.5 sq.mm
GTI003WLM1PW	16A	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.

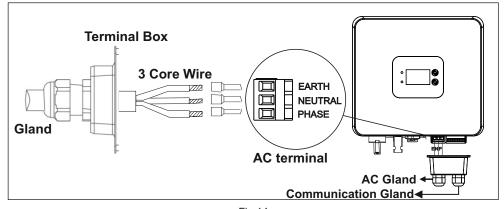


Fig 14

INVERTER GTI -SERIES User Manual INVERTER GTI -SERIES

# **6.3 Communication Module**

GTI-SERIES inverter's Communication terminal consist of RS-485, External CT and smart meter connections as shown in fig. 16. Table 4 explains signal connection on communication terminal.

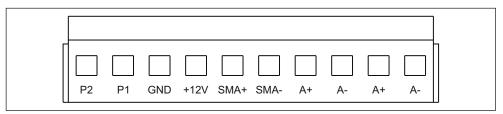


Fig 15

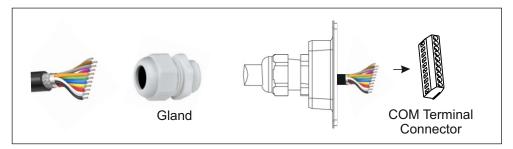
# 6.3.1 Connecting signal cable

PIN NO.	Definition		
1	P2	Signal for export Limitation	
2	P1	Signal for export Elimitation	
3	GND	Supply Connection	
4	+12V		
5	SMA+	RS485 Smart Meter Communication	
6	SMA-	RS465 Smart Weter Communication	
7	A+	RS485 External Communication	
8	A-		
9	A+		
10	A-		

Table 4

# 7. Procedure

- 7.1 Installation Connector And Connection
- 7.1.1 Steps of communication wiring
- Step 1 Remove the terminal cover and loosen communication gland.
- Step 2 Strip wires and insert them through communication gland.



**User Manual** 

Fig 16

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

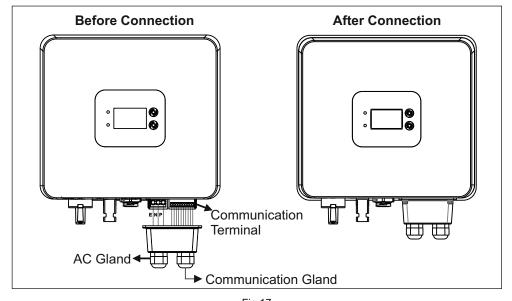


Fig 17

Step 4 Tighten gland and terminal cover