

RI-ENERGYFLOW-MIDI Series

String Grid-Tied PV Inverters

- Available as 3.0kW, 3.6kW, 4.0kW, 4.6kW, 5.0kW and 6.0kW - Single Phase versions
- Max. PV voltage up to 600V
- DC power up to 1.35 ratio
- High efficiency operation - up to 97.8%
- DC/AC surge protection
- Reactive power controller
- Natural cooling
- Remote monitoring
- Compact and lightweight and IP65 Rated
- Easy installation
- Optional Wi-Fi/GPRS plug
- G98, G99 and G100 compliant

1. Instructions

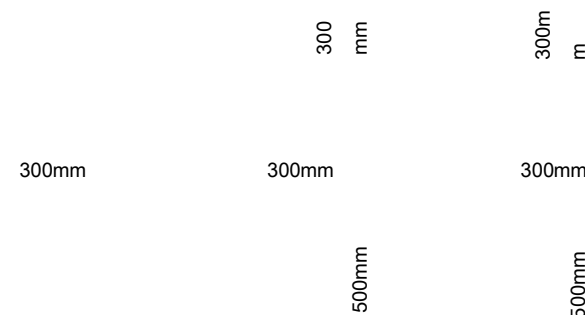
The inverter has been constructed according to the applicable safety and technical guidelines.

Use the inverter in installations that meet the following specifications ONLY:

1. Permanent installation is required.
2. The electrical installation must meet all the applicable regulations and standards.
3. The inverter must be installed according to the instructions stated in this manual.
4. The inverter must be installed according to the correct technical specifications.
5. To start-up the inverter, the Grid Supply Main Switch (AC) must be switched on, before the solar panel's DC isolator shall be switched on. To stop the inverter, the Grid Supply Main Switch (AC) must be switched off before the solar panel's DC isolator shall be switched off.

2. Mounting the Inverter

Dimensions of wall bracket:



▲ Figure 2.0 Inverter Mounting clearance

Please see Figure 2.2 and Figure 2.3 for instruction on mounting the inverter.

The inverter shall be mounted vertically. The steps to mount the inverter are listed below:

1. According to the figure 2.0, select the mounting height of the bracket and mark the mounting holes. For brick walls, the position of the holes should be suitable for the expansion bolts.



▲ Figure 2.1 Inverter wall mounting

Bracket

Suitable fixing screws

▲ Figure 2.2 Inverter wall mounting

2. Make sure the bracket is horizontal and the mounting holes (in Figure 2.2) are marked correctly. Drill the holes into the wall or pillar at your marks.
3. Use the suitable screws to fix the bracket to the wall.

WARNING:

The inverter must be mounted vertically.

4. Lift up the inverter (be careful to avoid body strain) and align the back bracket on the inverter with the convex section of the mounting bracket. Hang the inverter on the mounting bracket and make sure the inverter is secure (see Figure 2.3).

Locking screws

▲ Figure 2.3 Wall Mount Bracket

5. Use M5*16 screws in accessory to lock the inverter to the mount bracket.

3. Electrical Connections

3.1 Connect PV side of inverter

The electrical connection of the inverter must follow the steps listed below:

1. Switch the Grid Supply Main Switch (AC) OFF.
2. Switch the DC Isolator OFF.
3. Assemble PV input connector to the Inverter.

Before connecting inverter, please make sure the PV array open circuit voltage is within the limit of the inverter

Maximum 600Voc for 3.0S/3.0D/3.6D/4.0D/4.6D/5.0D/6.0D.

Please don't connect PV array positive or negative pole to the ground, it could cause serious damages to the inverter

Before connection, please make sure the polarity of the output voltage of PV array matches the "DC+" and "DC-" symbols.

▲ Figure 3.1 DC+ Connector

▲ Figure 3.2 DC- Connector

Please use approved DC cable for PV system.

Cable type	Cross section	
	Range	Recommended value
Industry generic PV cable(model: PV1-F)	4.0-6.0 (12-10AWG)	4.0 (12AWG)

▲ Table 3.1 DC cable

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

- i) Strip off the DC wire for about 7mm, Disassemble the connector cap nut.

▲ Figure 3.3 Disassemble the Connector Cap nut

- ii) Insert the wire into the connector cap nut and contact pin.

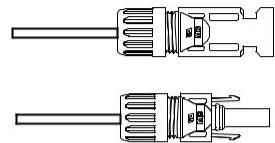
▲ Figure 3.4 Insert the Wire into the Connector Cap nut and contact pin

- iii) Crimp the contact pin to the wire using a proper wire crimper.

Crimping plier

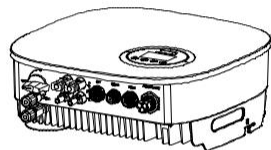
▲ Figure 3.5 Crimp the contact pin to the wire

- iv) Insert the contact pin to the top part of the connector and screw up the cap nut to the top part of the connector.



▲ Figure 3.6 Connector with Cap nut Screwed on

v) Then connect the DC connectors to the inverter. Small click will confirm connection.



▲ Figure 3.7 Connect the DC Connectors to the Inverter

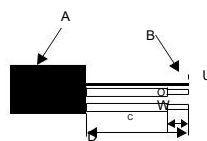
4. AC Cable Assembly and Connection

For all AC connections, 4-10mm² 105 XJ cable is required to be used. Please make sure the resistance of cable is lower than 1 ohm. If the wire is longer than 20m, it's recommended to use 10mm² cable.

WARNING:



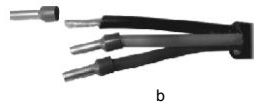
There are "N" "⚡"-symbols marked inside the connector, the Line wire of grid must be connected to "L" terminal; the Neutral wire of grid must be connected to "N" terminal; the Earth of grid must be connected to "⚡"



Object	Description	Value
A	External diameter	12mm to 18mm
B	Copper conductor cross-section	4mm ² to 10mm ²
C	Stripping length of the insulated conductors	approx. 13mm
D	Stripping length of the outer sheath of the AC cable	approx. 53mm

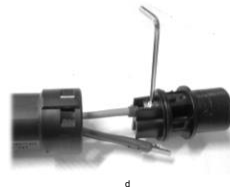
The PE conductor must be 10mm longer than the L and N conductors

b. Insert the conductor into the suitable ferrule acc. to DIN 46228-4 and crimp the contact.



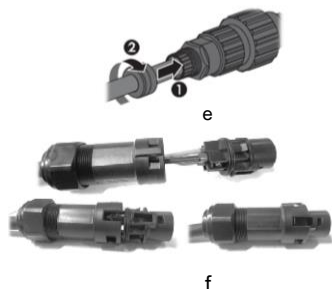
c. Unscrew the swivel nut from the threaded sleeve and thread the swivel nut and threaded sleeve over the AC cable.

d. Insert the crimped conductors L, N and PE into the corresponding terminals and tighten the screw with a hex key wrench screwdriver (size: 2.5, 1.2-2.0Nm). Ensure that all conductors are securely in place in the screw terminals on the bush insert.

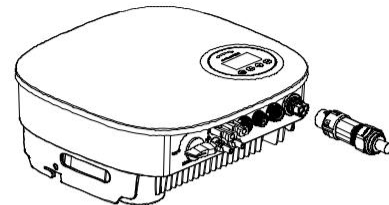


e. Screw the swivel nut onto the threaded sleeve. This seals the AC connector and provides strain relief for the AC cable. When doing so, hold the bush insert firmly by the locking cap. This ensures that the swivel nut can be screwed firmly onto the threaded sleeve.

f. Assemble the plug shell, adapter as below picture, Push the adapter and Shell by hand until a "Click" is heard or felt.



g. Plug the AC connector into the jack for the AC connection by hand until a "Click" is heard or felt.



▲ Figure 4.1 Connect the AC Connector to the Inverter

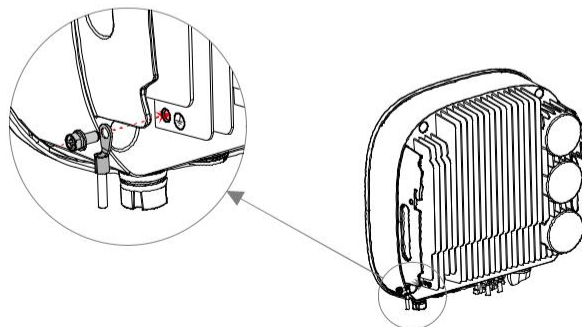


Note: Connection for Split phase grid.

When connect to 208/220/240V split phase, please connect L1 to "L" terminal, L2 to "N" terminal. Also connect earth to ground terminal.

5. External ground connection

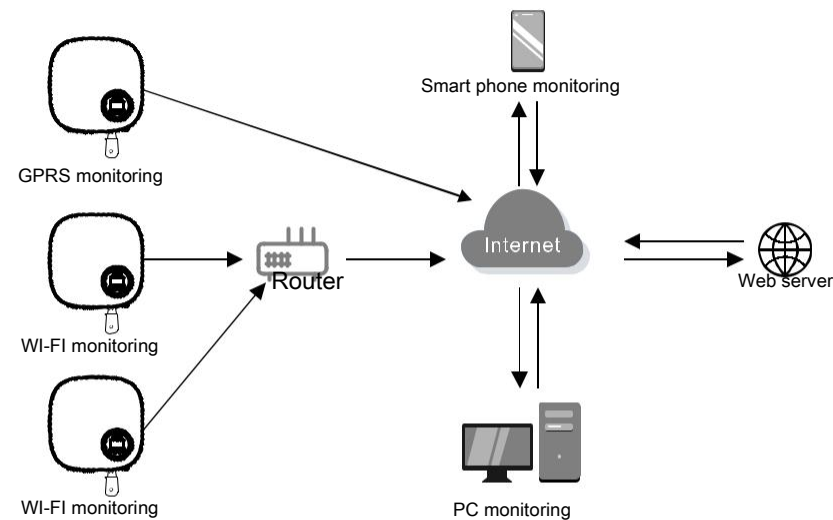
An external ground connection is provided at the right side of inverter. Prepare OT terminals: M5. Use proper tooling to crimp the lug to the terminal.



▲ Figure 5.1 Connect the external grounding conductor

6. Inverter monitoring connection

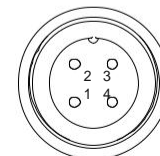
The inverter can be monitored via Wi-Fi or GPRS. All MIDI communication devices are optional (Figure 6.1). For connection instructions, please refer to MIDI Monitoring Device installation manuals.



▲ Figure 6.1 Communication function

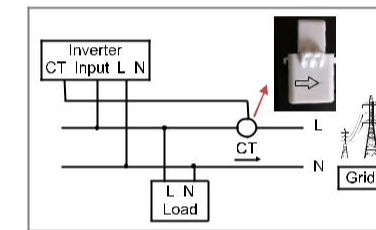
The inverter is equipped with standard RS485 and WLAN/GPRS communication ports, and the RS485 communication port is mainly used for the software upgrade, WLAN/GPRS communication port is for inverter wireless monitoring.

Pin	Description	Pin	Description
1	VCC	3	485A
2	GND	4	485B



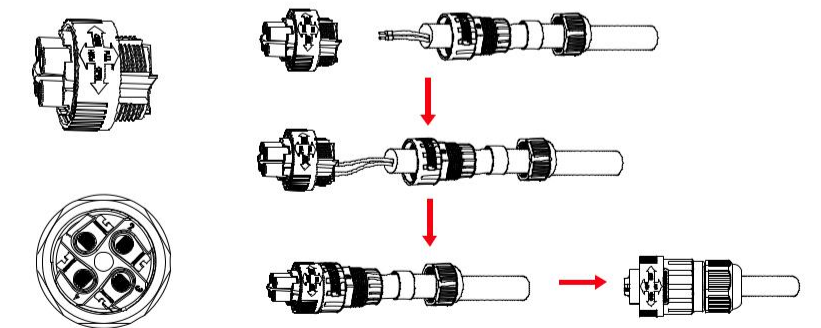
7. CT connections(optional)

This inverter has integrated export limitation functionality. To use this function, a CT must be installed, if use the CT, please reference below picture. The CT should be fitted around the live conductor on the grid side of the main incoming consumer unit. Use the directional flow indication arrow on the CT to ensure it is fitted in the correct orientation. The arrow should be pointing towards the grid, not the load.



Pin	Description
1	CT positive electrode
2	CT negative pole
3	NC
4	NC

Please follow below figure to assemble CT connector.



▲ Figure 7.1 CT connector

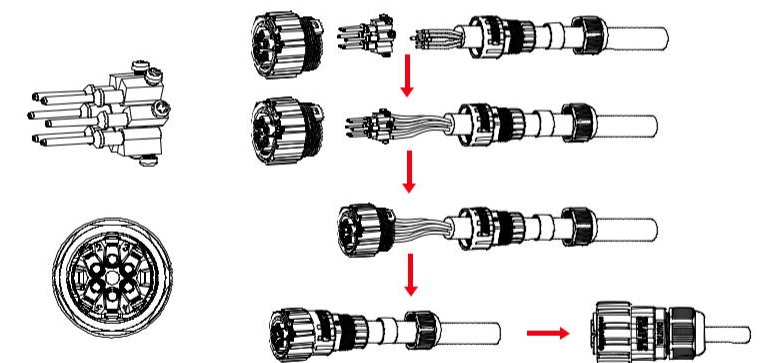
8. DRED port connections(optional)

DRED means demand response enable device. The AS/NZS 4777.2:2015 required inverter needs to support demand response mode (DRM). This function is for inverter that comply with AS/NZS 4777.2:2015 standard. MIDI single phase inverter is fully complied with all DRM. A 6P terminal is used for DRM connection.

Pin	Description	Pin	Description
1	DRM 1/5	4	DRM 4/8
2	DRM 2/6	5	DRM 4/8
3	DRM 3/7	6	Com/DRMO

▲ Table 8.1

Please follow below figure to assemble DRM connector.



▲ Figure 8.1 DRM connector

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