

**RI-ENERGYFLOW-MIDI Series** 

# RI-ENERGYFLOW MIDI Inverters

3.0D | 3.6D | 4.0D | 4.6D | 5.0D | 6.0D



## **User Manual**

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## 1. Introduction

## **1.1 Product description**

This manual describes solar inverters:

RI-ENERGYFLOW-MIDI-3.0D /3.6D /4.0D /4.6D /5.0D /6.0D.



Figure 1.2 Bottom side view

Object	Description	DVC class
1	PV1, PV2	DVC C
2	AC OUTPUT	DVC C
3	DRM	DVC A
4	СТ	DVC A
5	СОМ	DVC A

## 1.2 Packing

When you receive the inverter, ensure that all the parts listed below are included:



Part	Description	Number
1	PV grid tie inverter	1
2	Wall/pole bracket	1
3	Locking screws	2
4	DC connector	2 pairs for RI-ENERGYFLOW- MIDI
5	AC connector	1
6	Manual	1
7	OT terminal	1
8	Explpsion-proof screws	3

## **1.3 Optional Packing**



Part	Description	Number
1	DRM connector	1
2	CT connector	1
3	WiFi/GPRS Stick	1
4	1xCT and com cable	1

## 2. Safety instructions:

Please read the safety instructions in this manual. Throughout the manual it is assumed that the reader is familiar with AC and DC installations and knows the rules and regulations for electrical equipment and for connecting it to the utility AC grid. It is especially important to be familiar with the general safety rules for working with electrical equipment.

## 2.1 Applied designations

Throughout the manual important information is shown at different levels depending on the character of the information, as shown here:

$\bigwedge$	Safety information important for human safety. Violation of warnings may result in injury to persons or death.
$\bigwedge$	Danger of high voltage and electric shock!
5min	Signals danger due to electrical shock and indicates the time (5 minutes) to allow after the inverter has been turned off and disconnected to ensure safety in any installation operation.
	Danger of hot surface!
	Product should not be disposed as normal household waste.
Œ	Conformity with the applicable requirements for products sold within Europe.
UKA	Conformity with the applicable requirements for products sold within Great Britain.
	Information important for the protection of property. Violation of this type of information may cause damage and loss of property.
	Useful additional information or "Tips and Tricks" on specific subjects.
RoHS	ROHS Mark.

## 2.2 Notice for use

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 startup 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.

## 2.3 Important Safety Information

	Before installation:
	Check for damage to inverter and packaging. If you are in doubt, please contact your supplier before installing the inverter. Check the voltages of the solar modules and make sure they are within the limits of the inverter specifications before connecting them to the inverter.
	Installation:
	Only trained and authorized personnel familiar with local electrical codes may install the inverter. For optimum safety, please follow the steps described in this manual. Keep in mind that the inverter has two voltage carrying sides, the PV input and the AC grid.
	Disconnecting the inverter:
$\wedge$	Always disconnect the AC line first! Afterwards disconnect the PV lines. Note that the inverter can still be charged with very high voltages at hazardous levels even when it is disconnected from grid and solar modules. Wait at least 5 min. before proceeding, after having disconnected from grid and PV panels.
	Operating the inverter:
	Before connecting the AC grid to the inverter, make sure that the installation cover is mounted again. The inverter must not be open during operation.
	Maintenance and modification:
	Only authorized personnel are allowed to repair or modify the inverter. To ensure optimum safety for user and environment, only the original spare parts available from your supplier should be used.
	Functional safety parameters:
	Unauthorized changes of functional safety parameters may cause injury or accidents to people or inverter. Additionally it will lead to the cancelling of all inverter operating approval certificates.

Read this before installing, operating or maintaining the inverter.

## 2.4 System sizing

	When dimensioning a photovoltaic system, it must be ensured that the open-circuit voltage of the PV string never exceeds the maximum permissible input voltage. For 3.0D, 3.6D, 4.0D, 4.6D, 5.0D and 6.0D series inverters, the maximum input voltage is 600V DC. Higher voltages may result in permanent damage to the inverter.
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The selection of PV string output should be based on the optimum utilization of the invested capital compared to the expected annual energy yield from the system. This optimization depends on local weather conditions and should be considered in each individual case.

The inverter incorporates an input power limiting device, which automatically keeps the power at levels that are safe for the inverter. The limitation depends mainly on internal and ambient temperatures. The limitation is calculated continuously and always allows the maximum possible amount of energy to be produced.

Please use the tool supplied by Rayleigh Instruments when dimensioning a photovoltaic system.

## 3. Overview

#### 3.1 Front Panel Display

LCD display is Optional



Figure 3.1 Front Panel Display

## 3.2 LED Status Indicator Light

The LED status indicator can display red and green. When the indicator light is on, it indicates that there is power. When the indicator light is red, it indicates the alarm state; when the indicator light is green, it indicates the operation state.

Light	Status	Description
ALARM	ON	Alarm or fault condition is detected.
0	ON	The inverter is operating properly.
OPERATION	Flashing	Grid Connected countdown

Table 3.1 Status Indicator Light

## 3.3 Keypad (Optional)

There are four keys in the front panel of the Inverter from left to right: ESC,UP, DOWN and ENTER keys. The keypad is used for:

• Scrolling through the displayed options (the UP and DOWN keys);

• Access to modify the adjustable settings (the ESC and ENTER keys).

## 3.4 LCD (Optional)

The four-line Liquid Crystal Display (LCD) is located on the front panel of the Inverter, which shows the following information:

• Inverter operation status and data;

• Service messages for operator;

• Alarm messages and fault indications.

You can also get information via WiFi / GPRS.

## 4. Installation

#### 4.1 Select a Location for the Inverter

To selects location for the inverter, the following criteria should be considered:

• Do not install in small closed spaces where air can not circulate freely. To avoid overheating, always make sure the flow of air around the inverter is not blocked.

• *Exposure to direct sunlight will increase the operational temperature of the inverter* and may cause output power limiting. Rayleigh Instruments recommends inverter installed to avoid direct sunlight or raining.

• To avoid overheating ambient air temperature must be considered when choosing the inverter installation location. Rayleigh Instruments recommends using a sunshade to minimise direct sunlight when the ambient air temperature around the unit exceeds 104°F/40°C.

![](_page_8_Figure_12.jpeg)

Figure 4.1 Recommended Installation locations

• Install on a wall or strong structure capable of bearing the weight.

• *Install vertically with a maximum incline of* +/-5°. If the mounted inverter is tilted to an angle greater than the maximum noted, heat dissipation can be inhibited, and may result in less than expected output power.

• When 1 or more inverters are installed in one location, a minimum 300mm clearance should be kept between each inverter or other object. The bottom of the inverter should be 500mm clearance to the ground.

![](_page_8_Figure_17.jpeg)

Figure 4.2 Inverter Mounting clearance

• Visibility of the LED status indicator lights and the LCD located at the front panel of the inverter should be considered.

• Adequate ventilation must be provided if the inverter is to be installed in a confined space.

![](_page_9_Picture_1.jpeg)

Nothing should be stored on or placed against the inverter.

#### 4.2 Mounting the Inverter

Dimensions of wall bracket:

![](_page_9_Figure_5.jpeg)

Figure 4.3 Inverter wall mounting

Please see Figure 4.4 and Figure 4.5 for instructions on mounting the inverter.

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

1. According to figure 4.2, 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.

![](_page_9_Picture_10.jpeg)

Figure 4.4 Inverter wall mounting

2. Make sure the bracket is horizontal and the mounting holes (in Figure 4.4) are marked correctly. Drill the holes into the wall or pillar at your marks.

3. Use suitable screws to fix the bracket to the wall.

![](_page_10_Picture_2.jpeg)

4.Lift 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 4.5).

![](_page_10_Figure_4.jpeg)

Figure 4.5 Wall Mount Bracket

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

## **4.3 Electrical Connections**

#### 4.3.1 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.

![](_page_10_Picture_13.jpeg)

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

Maximum 600Voc for RI-ENERGYFLOW-MIDI-3.0D /3.6D /4.0D /4.6D /5.0D /6.0D.

![](_page_10_Picture_16.jpeg)

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

![](_page_11_Picture_0.jpeg)

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

![](_page_11_Figure_2.jpeg)

![](_page_11_Figure_3.jpeg)

![](_page_11_Figure_5.jpeg)

#### Figure 4.6 DC+ and DC- Connectors

![](_page_11_Picture_7.jpeg)

Please use the approved DC cable for the PV system.

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

Table 4.1 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.

![](_page_11_Figure_13.jpeg)

Figure 4.7 Disassemble the Connector Cap nut

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

![](_page_11_Figure_16.jpeg)

Figure 4.8 Insert the Wire into the Connector Cap nut and contact pin

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

![](_page_12_Figure_1.jpeg)

Figure 4.9 Crimp the contact pin to the wire

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

![](_page_12_Figure_4.jpeg)

Figure 4.10 Connector with Cap nut Screwed on

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

![](_page_12_Picture_7.jpeg)

Figure 4.11 Connect the DC Connectors to the Inverter

#### 4.3.2 Connect grid side of the inverter

For all AC connections, 4-10mm<sup>2</sup> 105 XJ cable is required to be used. Please make sure the resistance of the cable is lower than 1 ohm. If the wire is longer than 20m, it's recommended to use a 10mm<sup>2</sup> cable.

![](_page_12_Picture_11.jpeg)

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

![](_page_13_Figure_0.jpeg)

Object	Description	Value
A	External diameter	12mm to 18mm
В	Copper conductor cross-section	4mm <sup>2</sup> to 10mm <sup>2</sup>
С	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.

![](_page_13_Picture_3.jpeg)

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.

С

![](_page_13_Picture_6.jpeg)

d

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.

![](_page_13_Figure_9.jpeg)

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

![](_page_13_Picture_11.jpeg)

F

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

![](_page_14_Picture_1.jpeg)

Figure 4.17 Connect the AC Connector to the Inverter

![](_page_14_Picture_3.jpeg)

#### 4.3.3 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.

![](_page_14_Picture_7.jpeg)

Figure 4.18 Connect the external grounding conductor

When an earth fault occurs, the machine cannot be connected to the grid, the LED red light is on, and the LCD displays the fault code F07 until the fault is resolved.

#### 4.3.4 Max, over current protection device (OCPD)

To protect the inverter's PV and AC grid connection conductors, Rayleigh Instruments recommends installing breakers that will protect against overcurrent. The following table defines OCPD ratings for the RI-ENERGYFLOW-MIDI single-phase inverters.

Inverter	Rated output voltage(V)	Rated output current (A)	Current for protection device (A)
3.0D	230	14.4	20
3.6D	230	17	25
4.0D	230	19	30
4.6D	230	22	40
5.0D	230	24	40
6.0D	230	26	40

#### Table 4.3 Rating of grid OCPD

Inverter	Rated input voltage(V)	Max. input current (A)	Current for protection device (A)
3.0D	380	15	20
3.6D	380	15	20
4.0D	380	15	20
4.6D	380	15	20
5.0D	380	15	20
6.0D	380	15	20

#### Table 4.4 Rating of PV OCPD

#### 4.3.5 Inverter monitoring connection

The inverter can be monitored via Wi-Fi or GPRS. All RI-ENERGYFLOW-MIDI communication devices are optional (Figure 4.20). For connection instructions, please refer to the RI-ENERGYFLOW-MIDI Monitoring Device installation manuals.

![](_page_15_Figure_6.jpeg)

Figure 4.19 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	485 <i>B</i>

Table 4.5

![](_page_16_Figure_3.jpeg)

Figure 4.20 Inverter RS485/WLAN/GPRS port

4.3.6 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 the picture below. 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.

![](_page_16_Figure_7.jpeg)

Figure 4.21 Direction of CT

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

Table 4.6

Please follow the figure below to assemble the CT connector

![](_page_17_Figure_1.jpeg)

Figure 4.22 CT connector

4.3.7 DRED port connections(optional)

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

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

Table 4.7

Please follow below figure to assemble DRM connector.

![](_page_17_Figure_8.jpeg)

![](_page_17_Figure_9.jpeg)

## 5. Start&Stop

## 5.1 Start the Inverter

To start up the Inverter, the following steps must be strictly followed:

1. Switch the grid supply main Switch (AC) ON first.

2. Switch the DC switch ON. If the voltage of PV arrays is higher than the start-up voltage, the inverter will turn on. The LED status indicator will light.

3. When both the DC and the AC sides supply to the inverter, it will be ready to generate power. Initially, the inverter will check both its internal parameters and the parameters of the AC grid, to ensure that they are within acceptable limits. At the same time, the green LED will flash and the LCD displays the information of INITIALIZING.

4. After 20-300 seconds (depending on local requirement), the inverter will start to generate power. The green LED will be on continually and the LCD displays GENERATING.

![](_page_18_Picture_7.jpeg)

Do not touch the surface when the inverter is operating. It may be hot and cause burns.

## 5.2 Stop the Inverter

To stop the Inverter, the following steps must be strictly followed:

- 1. Switch the Supply Main Switch (AC) OFF.
- 2. Wait 30 seconds. Switch the DC Switch OFF. All the LEDs of the inverter will be off in one minute.

## 6. Operation

During the normal operation, the display alternately shows various status information (see Figure 6.1). Screens can also be scrolled manually by pressing the UP and DOWN keys.

![](_page_18_Figure_15.jpeg)

Figure 6.1 Operation Overview

#### Lock screen

Pressing the ENTER key locks (Figure 6.2(a)) or unlocks (Figure 6.2 (b)) the screen.

	PV1 INPUT
VOLT : 33.8V	VOLT : 33.8V
CURR : 0.00A	CURR : 0.00A
POWER: 0W	POWER: 0W
(a)	(b)

Figure 6.2 Locks and Unlocks the Screen of LCD

#### Main Menu

Press the ESC key to access to the Main Menu, there are three submenus in the Main Menu (see Figure 6.3):

![](_page_19_Figure_6.jpeg)

Figure 6.3 Main Menu

#### 6.1 Setup-Technicians Only

![](_page_19_Picture_9.jpeg)

To access this area is for fully qualified and accredited technicians only. Enter menu "SETUP" need password.

Select "SETUP" from the Main Menu. The screen will require the password as below.

PASSWO	RD
INPUT : X>	XXX

Figure 6.4 Enter password

The default password is "0000". Please press "ENTER" to move the cursor backwards or confirm the setting, press "up" / "DOWN" to select the number, press "ESC" to move the cursor forward or return to the Main Menu. After entering the correct password the Main Menu will display a screen and be able to access the following information, You can also continue to access the next menu level. Password can be changed through item 11.

![](_page_20_Figure_1.jpeg)

Figure 6.5 Setup menu

![](_page_20_Picture_3.jpeg)

"POWER FACTOR" mode is selected by default, and "QU WAVE" or other modes can be selected through this page.

#### 6.1.1 Set DATE/TIME

Please set the time and date after starting the inverter for the first time.

DATE/TIME		
DATE : 2020-06-06		
TIME: 10:01:12		
WEEK: 6		

Figure 6.6 Set Date/Time

#### **6.2 INQUIRE**

The following submenus are displayed when the Inquiry menu is selected, you can also continue to access the next menu level.

![](_page_21_Figure_0.jpeg)

## 6.3 Statistics

Select Statistics from the Main Menu to access the following options, you can also continue to access the next menu level.

![](_page_21_Figure_3.jpeg)

## 7. Maintenance

RI-ENERGYFLOW-MIDI single phase inverter does not require any regular maintenance. However, cleaning the dust on the heat sink will help the inverter to dissipate the heat and increase its lifetime. The dust can be removed with a soft brush.

![](_page_21_Picture_6.jpeg)

Do not touch the inverter's surface when it is operating. Some parts of the inverter may be hot and cause burns. Turn off the inverter (refer to Section 5.2) and wait for a cool-down period before any maintenance or cleaning operation.

The LCD and the LED status indicator lights can be cleaned with a damp cloth if they are too dirty to be read.

![](_page_21_Picture_9.jpeg)

Never use any solvents, abrasives or corrosive materials to clean the inverter.

## 8. Troubleshooting

It is very easy for the inverter's maintenance. When you meet any problems, please refer to the following troubleshooting table first, please contact your local distributor if the problem can't be solved by yourself. The following table lists some basic questions that may encounter in the operation.

Alarm message	Failure description	Solution

F00-F03	AC voltage & frequency are too high or too low.	<ol> <li>Pease check mains voltage whether it is complied with local,safety standard</li> <li>Please check the AC output line is properly connected. Make sure its output voltage to see if it is normal.</li> <li>Disconnect PV input and restart the inverter and check whether.</li> </ol>
F04-F05	Bus voltage is too high or too low.	<ol> <li>Please check the setting of input mode</li> <li>Disconnect PV input and restart the inverter and check whether fault still exists.</li> </ol>
F06	Bus voltage is Unbalance	1.Please check the setting of input mode. 2.Disconnect PV input and restart the inverter and check whether fault still exists.
F07	Insulation impedance Fault	<ol> <li>Disconnect PV input and restart the inverter and check whether fault still exists.</li> <li>Please measure impedance of PV+/PV- to ground whether is over than 500KΩ.</li> </ol>
F08	Input Current High	<ol> <li>Please check the setting of input mode.</li> <li>Disconnect PV input and restart the inverter and check whether fault still exists.</li> </ol>
F09	Hardware Current High	1.Disconnect PV input and restart the inverter after few minutes and check whether fault still exists.
F10	Inverter Current High	1.Disconnect PV input and restart the inverter after few minutes and check whether fault still exists.
F11	Inverter DC Current high	1.Disconnect PV input and restart the inverter after few minutes and check whether fault still exists.
F12	Amb Temperatur Over	<ol> <li>Disconnect PV input and cool down the inverter then restart the inverter to see if it is back to normal operation.</li> <li>Please check environmental temperature whether out of working temperature.</li> </ol>
F13	Heatsink Temperature High	<ol> <li>Disconnect PV input and cool down the inverter then restart the inverter to see if it is back to normal operation.</li> <li>Please check environmental temperature whether out of working temperature.</li> </ol>
F14	AC Relay Fault	1.Disconnect PV input and restart the inverter and check whether fault still exists.
F15	PV Input Voltage Low	<ol> <li>Please check the configuration of PV input, one of PV input is idle when inverter is set on parallel mode.</li> <li>Disconnect the PV input and restart the inverter and check whether fault still exists.</li> </ol>
F16	Remote Off	1.The inverter is on remote OFF status, the Inverter can be turned off/on remotely by monitoring software.
F18	SPI communication Fault	1.Disconnect PV input and restart the inverter and check whether fault still exists.
F20	Leakage Current High	1.Disconnect PV input and restart the inverter and check whether fault still exists.
F21	Leakage Current Self- Checking Failure	<ul><li>1.Disconnect PV input and restart the inverter and check whether fault still exists.</li><li>2.Contact with your local distributor if the fault still exists.</li></ul>
F22	Consistency Voltage Fault	<ul> <li>1.Disconnect PV input and restart the inverter and check whether fault still exists.</li> <li>2.Contact with your local distributor if the fault still exists.</li> </ul>
F23	Consistency Frequency Fault	<ul><li>1.Disconnect PV input and restart the inverter and check whether fault still exists.</li><li>2.Contact with your local distributor if the fault still exists.</li></ul>
F24	DSP Operation Fault	<ul><li>1.Disconnect PV input and restart the inverter and check whether fault still exists.</li><li>2.Contact with your local distributor if the fault still exists.</li></ul>
F32	DSP communication Lost	1.Disconnect PV input and restart the inverter and check whether fault still exists.

![](_page_23_Picture_0.jpeg)

If the inverter displays any alarm message as listed in the previous table; please turn off the inverter (refer to Section 5.2 to stop your inverter) and wait for 5 minutes before restarting it (refer to Section 5.1 to start your inverter). If the failure persists, please contact your local distributor or the service centre. Please keep ready with you the following information before contacting us.

1. Serial number of RI-ENERGYFLOW-MIDI Single Phase Inverter;

- 2. The distributor/dealer of RI-ENERGYFLOW-MIDI Single Phase Inverter (if available);
- 3. Installation date.

4. The description of the problem (i.e. the alarm message displayed on the LCD and the status of the LED status indicator lights. Other readings obtained from the Information submenu will also be helpful.) ;

5. The PV array configuration (e.g. number of panels, the capacity of panels, number of strings, etc.);

6. Your contact details.

## 9. Specifications

Model - RI-ENERGYFLOW-MIDI-	3.0D	3.6D	4.0D	4.6D	5.0D	6.0D	
DC Input Data							
Max. DC power (W)	4050	4860	5400	6210	6750	8100	
Max./Rated DC voltage(V)			600	V / 380V			
Min. / Start DC voltage(V)			120	V / 100V			
MPPT voltage range(V)	80V-550V						
Number of MPPT		2					
Strings per MPPT				1			
Max. input current per MPPT(A)				15			
AC Output Data							
Rated AC output power(W)	3000	3600	4000	4600	5000	6000	
Max. AC output power(VA)	3300	3960	4400	5060	5500	6600	
Max. output current(A)	14.4	17	19	22	24	26	
Rated AC voltage(V)			23	30Vac±20%		·	
AC voltage range(V)			2	30Vac			
Rated AC grid frequency(Hz)	50 / 60Hz						
AC grid frequency range(Hz)	50 / 60Hz(±5Hz)						
Power Factor ( $\cos \Phi$ )	0.8 leading ~ 0.8 lagging						
THDi	<3%						
Efficiency							
Max.Efficiency	9	8.1%			98.3%		
Euro Efficiency	9	7.7%	97.9%				
Protection							
Anti-island Protection			In	tegrated			
Output over current protection	rrent protection		Integrated				
Output short protection	Integrated						
DC reverse-polarity protection	Integrated						
General Data							
Size(Width*Height*Depth)	380 x 380 x 150						
Weight(kg)							
	LED & LCD						
Communication							
Ambient Temperature Range	-25 °C ~ 60 °C						
			0	-100%			
Operating Altitude			≤4000m				
Standby Self Consumption			<0.277				
i opology			I ransformeriess				
Cooling			Natu	ral Cooling			
Protection Grades	IP65						

Noise	<25dB			
Warranty	5 /7/10 years			
Optional	DC Switch / WiFi Plug / GPRS Plug			
AC Output terminal type	Quick connector			
Certifications & Standards				
Grid Regulation	IEC61683, IEC60068, IEC60529, EC62116, IEC61727, EN50549- 1, AS4777, NRS 097, VDE-AR-N-4105, VDE 0126-1-1, CEI0-21, G98, G99, C10/C11, TED749, UNE217001, UNE217002, NB/T32004-2018, GB/T19964-2012, INMETRO			
Safety Regulation	IEC 62109-1, IEC 62109-2			
EMC	IEC/EN61000-6-2, IEC/EN6100-6-4			

## **10. Quality Assurance**

Once the product has been installed and operational, it is paramount to register the product to initiate the Warranty cover, without this, your product would not be covered under our warranty scheme. Please follow this web link for the full procedure:

https://www.rayleigh.com/warranties/

When product faults occur during the warranty period, Rayleigh Instruments or his partner will provide free service or replace the product with a new one.

#### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, Rayleigh Instruments has the right to refuse to honour the quality guarantee.

#### Conditions

- After replacement, unqualified products shall be processed by Rayleigh Instruments.
- The customer shall give Rayleigh Instruments or his partner a reasonable period to repair the faulty device.

#### **Exclusion of Liability**

In the following circumstances, Rayleigh Instruments has the right to refuse to honour the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in a harsh environment, as described in this manual.

• The fault or damage is caused by installation, repairs, modifications, or disassembly performed by a service provider or personnel, not from Rayleigh Instruments or his authorized partner.

• The fault or damage is caused by the use of non-standards

#### components or software.

• The installation and use range are beyond stipulations of relevant international standards.

• *The damage is caused by unexpected* natural factors. For faulty products in any of the above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of Rayleigh Instruments.

![](_page_26_Picture_0.jpeg)

If you have any further technical questions about our product please contact us:

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