User Manual

Jupiter Series Three Phase Solar Inverters

- Higher quality guaranteed
- Longer MTBF (Mean Time Between Failures)
- Easy to manage and maintain

Jupiter Series:
PJ-4KTL-DT
PJ-5KTL-DT
PJ-6KTL-DT
PJ-8KTL-DT
PJ-10KTL-DT
PJ-11KTL-DT
PJ-12KTL-DT
No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photographic, magnetic or otherwise, without the prior written permission of PurpleRubik New Energy Technology Co., Ltd. (hereinafter referred to as PurpleRubik)

**Trademarks and Permissions**

and other PurpleRubik trademarks are trademarks of PurpleRubik New Energy Technology Co., Ltd. All other trademarks and trade names mentioned in this document are the property of their respective holders.

**Notice**

PurpleRubik makes no representations, express or implied, with respect to this documentation or any of the equipment and/or software it may describe, including (with no limitation) any implied warranties of utility, merchantability, or fitness for any particular purpose. All such warranties are expressly disclaimed. Neither PurpleRubik nor its distributors or dealers shall be liable for any indirect, incidental, or consequential damages under any circumstances. (The exclusion of implied warranties may not apply in all cases under some statutes, and thus the above exclusion may not apply.)

Specifications are subject to change without notice. Every attempt has been made to make this document complete, accurate and up-to-date. Readers are cautioned, however, that PurpleRubik reserves the right to make changes without notice and shall not be responsible for any damages, including indirect, incidental or consequential damages, caused by reliance on the material presented, including, but not limited to, omissions, typographical errors, arithmetical errors or listing errors in the content material.

All trademarks are recognized even if these are not marked separately. Missing designations do not mean that a product or brand is not a registered trademark.

**PURPLERUBIK NEW ENERGY TECHNOLOGY CO., LTD.**
**Address:** No.116 Chengyang Rd. Suzhou, P.R. China, 215000
**Website:** www.purplerubik.com
**E-mail:** customercare@purplerubik.com
CONTENT

1. About This Manual..............................................................................................................1
   1.1 Validity..........................................................................................................................1
   1.2 Target Group................................................................................................................1
   1.3 Additional Information...............................................................................................1
   1.4 Symbols in this Document..........................................................................................1
   1.5 Glossary.....................................................................................................................3

2. Safety Precautions.............................................................................................................4
   2.1 Personnel Requirements............................................................................................4
   2.2 Identification Protection............................................................................................4
   2.3 Intended Use...............................................................................................................4
   2.4 Safety Instruction.......................................................................................................5
   2.5 Assembly Warnings....................................................................................................5
   2.6 Electrical Connection Warnings................................................................................6
   2.7 Electrical Connection Warnings................................................................................7

3. Product Description..........................................................................................................7
   3.1 Overview.....................................................................................................................7
   3.2 Nameplates................................................................................................................8
   3.3 Technical Parameters...............................................................................................9

4. Unpacking........................................................................................................................10
   4.1 Package.....................................................................................................................10
   4.2 Selecting Mounting Location....................................................................................10
   4.3 Mounting Procedure.................................................................................................12
   4.4 Grounding................................................................................................................13
   4.5 Types of Grid Networks.............................................................................................14
   4.6 Electrical Connection...............................................................................................14

5. Commissioning................................................................................................................18
   5.1 Electrical Check.........................................................................................................18
   5.2 Mechanical Check.....................................................................................................18
   5.3 Setting Initialization Parameters...............................................................................18
   5.4 Startup.......................................................................................................................18
6. Operation Instruction

6.1 Monitoring Panel

6.2 LED Status

6.3 LCD Display and Button

6.4 Status and Fault Information

6.5 Set Language and Power Grid Standard

7. Communication and Monitoring

7.1 RS485 (standard)

7.2 WIFI Lite Device (Optional)

7.3 GPRS Lite Device (Optional)

8. Maintenance and Cleaning

8.1 Maintenance

8.2 Cleaning the Inverter

9. Dismantling the Inverter

9.1 Dismantling the Inverter

9.2 Disposing of the Inverter

10. Troubleshooting

10.1 Warnings (W)

10.2 Diagnosis and Solutions

11. Certificates and Service

11.1 Certificates

11.2 Service

12. Contact
1 About This Manual

1.1 Validity

This installation and user guide describes the installation, electrical connections, commissioning, communication, maintenance, and troubleshooting of the following PurpleRubik inverters:
PJ-4K/5K/6K/8K/10K/11K/12KTL-DT

This manual does not cover any details concerning equipment connected to the PurpleRubik inverters (e.g. PV modules). Information concerning the connected equipment is available from the manufacturer of the equipment. This document is under continuous updates and correcting. You can download the latest version from www.purplerubik.com.

1.2 Target Group

This manual is for qualified personnel who have received training and have demonstrated skills and knowledge in the construction and operation of this device. Operation personnel should understand the composition and working principles of the PV grid-tied power system and local regulations. Qualified Personnel are trained to deal with the dangers and hazards.

1.3 Additional Information

The manual and other documents must be stored in a convenient place and be available at all times. We assume no liability for any damage caused by failure to observe these instructions. For possible changes in this manual, PurpleRubik accepts no responsibilities to inform the users.

1.4 Symbols in this Document

1.4.1. Warnings in this document
A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the PurpleRubik equipment and/or other equipment connected to the PurpleRubik equipment or personal injury.

Manual Introduce and Copyright
Copyright © 2017 PurpleRubik New Energy Technology Co., Ltd. All rights reserved
### Symbol Descriptions

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Danger" /></td>
<td>DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
<tr>
<td><img src="image" alt="Caution" /></td>
<td>CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</td>
</tr>
<tr>
<td><img src="image" alt="Notice" /></td>
<td>NOTICE is used to address practices not related to personal injury.</td>
</tr>
</tbody>
</table>

### 1.4.2 Markings on this product

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Caution" /></td>
<td>Caution! Failure to observe a warning indicated in this manual may result in injury.</td>
</tr>
<tr>
<td><img src="image" alt="Danger" /></td>
<td>Danger to life from electric shock due to high voltages in the inverter.</td>
</tr>
<tr>
<td><img src="image" alt="Risk" /></td>
<td>Risk of burns from hot surfaces.</td>
</tr>
<tr>
<td><img src="image" alt="Disposal" /></td>
<td>Product should not be disposed as household waste.</td>
</tr>
<tr>
<td><img src="image" alt="Grounding" /></td>
<td>Point of connection for grounding protection.</td>
</tr>
<tr>
<td><img src="image" alt="This Side Up" /></td>
<td>This side up! The package must always be transported, handled and stored in such a way that the arrows always point upwards.</td>
</tr>
<tr>
<td><img src="image" alt="Recycle" /></td>
<td>Components of the product can be recycled.</td>
</tr>
<tr>
<td><img src="image" alt="Handle" /></td>
<td>The package/product should be handled carefully and never tipped over or slung.</td>
</tr>
</tbody>
</table>
Observe the user manual. Read the documentation of the product before working on it. Follow all safety precautions and instructions as described in the manual.

1.5 Glossary

AC
Abbreviation for "Alternating Current".

DC
Abbreviation for "Direct Current".

Energy
Energy is measured in Wh (watt hours), kWh (kilowatt hours) or MWh (megawatt hours). The energy is the power calculated over time. If, for example, your inverter operates at a constant power of 1500W for half an hour and then at a constant power of 1000 W for another half an hour, it has fed 1250 Wh of energy into the power distribution grid within that hour.

Power
Power is measured in W (watts), kW (kilowatts) or MW (megawatts). Power is an instantaneous value. It displays the power that your inverter is currently feeding into the power distribution grid.

Power Rate
Power rate is the ratio of current power feeding into the power distribution grid and the maximum power of the inverter that can feed into the power distribution.
Power Factor
Power factor is the ratio of true power or watts to apparent power or volt amps. They are identical only when current and voltage are in phase than the power factor is 1.0. The power in an AC circuit is very seldom equal to the direct product of the volts and amperes. In order to find the power of a single phase AC circuit, the product of volts and amperes must be multiplied by the power factor.

PV
Abbreviation for photovoltaic.

2. Safety Precautions

Read the safety precautions carefully to ensure human safety.

2.1 Personnel Requirements

All work on the inverter (e.g. repairs, modifications) may only be carried out by qualified and trained electrical technicians. Operation personnel should understand the composition and working principles of the PV grid-tied power system and local regulations.

2.2 Identification Protection

The signs on the PM-1500~3000TL-SS/PV-3000~5000TL-DS shell specify important information about secure operation. Do not damage the signs. The nameplate attached to the inverter side panel lists the parameter information. Do not damage the nameplate.

2.3 Intended Use

The unit converts the DC current generated by the photovoltaic (PV) modules to grid-compliant alternating current and performs single-phase feed-in into the electricity grid. PM-1500~3000TL-SS/PV-3000~5000TL-DS series inverters are built according to all required safety rules. Nevertheless, improper use may cause lethal hazards for the operator or third parties, or may result in damage to the units and other property. The inverter may only be operated with a permanent connection to the public power grid. The inverter is not intended for mobile use. Any other or additional use is not considered the intended use. The manufacturer/supplier is not liable for damage caused by such unintended use. Damage caused by such unintended use is at the sole risk of the operator.
PV Modules Capacitive Discharge Currents
PV modules with large capacities relative to earth, such as thin-film PV modules with cells on a metallic substrate, may only be used if their coupling capacity does not exceed 470nF. During feed-in operation, a leakage current flows from the cells to earth, the size of which depends on the manner in which the PV modules are installed (e.g. foil on metal roof) and on the weather (rain, snow). This "normal" leakage current may not exceed 50mA due to the fact that the inverter would otherwise automatically disconnect from the electricity grid as a protective measure.

2.4 Safety Instruction

The PurpleRubik inverters are designed and tested according to international safety requirements; however, certain safety precautions must be observed when installing and operating this inverter. Read and follow all instructions, cautions and warnings in this installation manual. If questions arise, please contact PurpleRubik technical services at 0086 400 928 1628.

2.5 Assembly Warnings

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| ![WARNING] | ➢ Prior to installation, inspect the unit to ensure absence of any transport or handling damage, which could affect insulation integrity or safety clearances; failure to do so could result in safety hazards.  
➢ Assemble the inverter according to the instructions in this manual. Use carefully when choosing installation location and adhere to specified cooling requirements.  
➢ Unauthorized removal of necessary protections, improper use, incorrect installation and operation may lead to serious safety and shock hazards and/or equipment damage.  
➢ In order to minimize the potential of a shock hazard due to hazardous voltage, cover the entire solar array with dark material prior to connecting the array to any equipment. |
| ![CAUTION] | ➢ Comply with the local requirements for grounding the modules and the PV generator. PurpleRubik recommends connecting the generator frame and other electricity conducting surfaces such that there is continuous conduction and to connect them to the ground in order to reach maximum protection for property and persons.  
➢ PV systems with transformerless inverters are not galvanically isolated from the grid during feed-in operation. Transformerless inverters can be damaged by sporadic ground faults in the module array. Possible causes for 'Isolation Fault' are damaged PV modules, DC cables or PV connectors. The Riso value can vary depending on the weather (humidity/moisture on the modules). |
## 2.6 Operation  Warnings

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| ![DANGER](image) | ➢ The live voltages are present on the components in a running inverter. Touching live components can result in serious injury or death.  
➢ Do not open the inverter except the wire box by qualified persons.  
➢ Electrical installation, repairs and conversions may only be carried out by electrically qualified persons.  
➢ Do not touch damaged inverters when it is working.  
➢ Danger to life due to high voltages in the inverter.  
➢ There is residual voltage in the inverter. It takes 20 minutes to discharge. Wait 20 minutes before you open the wire box.  
➢ Persons with limited physical or mental abilities may only work with the PurpleRubik inverter when following proper instruction and under constant supervision. Children are forbidden to play with the PurpleRubik inverter. Must keep the PurpleRubik inverter away from children. |
| ![WARNING](image) | ➢ Make all electrical connections (e.g. conductor termination, fuses, PE connection, etc.) in accordance with prevailing regulations to minimize risk of accidents.  
➢ Systems with inverters typically require additional control (e.g., switches, disconnects) or protective devices (e.g., fusing circuit breakers) depending upon the prevailing safety rules. |
| ![CAUTION](image) | ➢ The PurpleRubik inverter converts DC current from PV generator into AC current. The inverter is suitable for mounting indoors and outdoors. You can use the AC current generated as follows:  
➢ House grid: Energy flows into the house grid. The consumers connected, for example, household devices or lighting, consume the energy. The energy left over is fed into the public grid. When the PurpleRubik is not generated any energy, for instance, at night, the consumers which are connected are supplied by the public grid. The PurpleRubik inverter does not have its own energy meter. Public grid: Energy is fed directly into the public grid. The PurpleRubik is connected to a separate energy meter. The energy produced is compensated at a rate depending on the electric power company. |
### 2.7 Electrical Connection Warnings

| WARNING | ➢ Ensure all covers and doors are closed and secure during operation.  
➢ Although designed to meet all safety requirements, some parts and surfaces of inverter are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the inverter or nearby surfaces while inverter is running.  
➢ Incorrect sizing of the PV plant may result in voltages being present which could destroy the inverter. The inverter display will read the error message “PV Voltage High!” Turn the rotary switch of the DC to the off position immediately. |
| CAUTION | ➢ All operations regarding transport, installation and start-up, including maintenance, must be operated by qualified, trained personnel and in compliance with all prevailing codes and regulations.  
➢ Anytime the inverter has been disconnected from the power network, use extreme caution as some components can retain charge sufficient to create a shock hazard; to minimize the occurrence of such conditions, comply with all corresponding safety symbols and markings present on the unit and in this manual.  
➢ In special cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers). In this case, the operator is obliged to take proper action to rectify the situation.  
➢ Do not stay closer than 20cm to the inverter for any length of time. |

### 3. Product Description

#### 3.1 Overview

![Diagram of inverter components](image_url)

1.  
2.  
3.  
4.  
5.  
6.  
7.  
8.  
9.  
10.  
11.  
12.
3.2 Nameplates

You can identify the inverter by the nameplate, which is usually located on the right side of the enclosure. You can view the device-specific key data of the product, like technical specifications and certifications. The nameplate is illustrated on the next page.
### 3.3 Technical Parameters

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PJ-4KTL-DT</th>
<th>PJ-5KTL-DT</th>
<th>PJ-6KTL-DT</th>
<th>PJ-8KTL-DT</th>
<th>PJ-10KTL-DT</th>
<th>PJ-11KTL-DT</th>
<th>PJ-12KTL-DT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input (DC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. DC Power</td>
<td>4800W</td>
<td>6000W</td>
<td>7200W</td>
<td>9600W</td>
<td>12000W</td>
<td>13200W</td>
<td>14400W</td>
</tr>
<tr>
<td>Max Input Voltage</td>
<td>1000Vdc</td>
<td>1000Vdc</td>
<td>1000Vdc</td>
<td>2000Vdc</td>
<td>1000Vdc</td>
<td>1000Vdc</td>
<td>1000Vdc</td>
</tr>
<tr>
<td>Startup Voltage</td>
<td>180Vdc</td>
<td>150Vdc</td>
<td>180Vdc</td>
<td>180Vdc</td>
<td>180Vdc</td>
<td>180Vdc</td>
<td>180Vdc</td>
</tr>
<tr>
<td>Max Input Current per String</td>
<td>11A/10A</td>
<td>11A/10A</td>
<td>11A/10A</td>
<td>11A/10A</td>
<td>11A/10A</td>
<td>11A/10A</td>
<td>11A/10A</td>
</tr>
<tr>
<td>Short-circuit Current</td>
<td>15A/13A</td>
<td>15A/13A</td>
<td>15A/13A</td>
<td>15A/13A</td>
<td>15A/13A</td>
<td>15A/13A</td>
<td>15A/13A</td>
</tr>
<tr>
<td>Number of Independent MPP Inputs</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Maximum Inverter Isolated Current to Array</td>
<td>0A</td>
<td>0A</td>
<td>0A</td>
<td>0A</td>
<td>0A</td>
<td>0A</td>
<td>0A</td>
</tr>
<tr>
<td><strong>Output (AC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated Power</td>
<td>4000W</td>
<td>5000W</td>
<td>6000W</td>
<td>8000W</td>
<td>10000W</td>
<td>11000W</td>
<td>12000W</td>
</tr>
<tr>
<td>Max. Apparent AC Power</td>
<td>4400VA</td>
<td>5500VA</td>
<td>6600VA</td>
<td>8800VA</td>
<td>11000VA</td>
<td>12100VA</td>
<td>13200VA</td>
</tr>
<tr>
<td>AC Power Frequency</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
<td>50Hz/60Hz</td>
</tr>
<tr>
<td>Max. Output Current</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
<td>6.4Aac</td>
</tr>
<tr>
<td>Power Factor Range</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
<td>0.6 ... 0.8 cos</td>
</tr>
<tr>
<td>Total Harmonic Distortion (THD)</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
<td>&lt; 3%</td>
</tr>
<tr>
<td>Feed-in Phases (Connection Phases)</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
<td>3W/3P/4WPE</td>
</tr>
<tr>
<td>Insurr Current (Peak and Duration)</td>
<td>3.3Apeak/7.8ms</td>
<td>4.8Apeak/7.8ms</td>
<td>4.8Apeak/7.8ms</td>
<td>5.3Apeak/7.8ms</td>
<td>5.3Apeak/7.8ms</td>
<td>5.3Apeak/7.8ms</td>
<td>5.3Apeak/7.8ms</td>
</tr>
<tr>
<td>Maximum Output Fault Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
<td>50% of Rated Current</td>
</tr>
<tr>
<td>Maximum Overcurrent Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Efficiency

- **Max. Efficiency**: >98.1%
- **European Weighted Efficiency**: >97.8%
- **Steady State Efficiency**: >97.8%
- **Start-up Efficiency**: >97.8%

### Protective Devices

- **DC Reverse Polarity Protection**: Yes
- **AC Over Current Protection**: Yes
- **Ground Fault Monitoring**: Yes
- **Residual Current Monitoring Unit**: Yes

### General Data

- **Dimensions (W/H/D)**: 562x182x395
- **Weight**: 20.5 Kg, 20.5 Kg, 20.5 Kg, 20.5 Kg, 21 Kg, 21 Kg, 21 Kg
- **Operating Temperature Range**: -25°C ... +60°C
- **Noise Emission (typical)**: < 35 dB(A)
- **Max. Operating Altitude**: > 2000m derating
- **Nominal Voltage**: 380V/220V
- **Steady State Efficiency**: >97.8%
- **Start-up Efficiency**: >97.8%
- **AC Connection Type**: Plug-in Connector
- **Display**: 3.5 Inch LCD
- **Interface**: RJ45 (LAN/GPRS Optional)
- **Warranty**: 5/10 years (Optional)

*The AC voltage and frequency range may vary due to local regulations.*

PurpleRubik New Energy Technology Co., Ltd.
4. Unpacking

4.1 Package

Thoroughly inspect the packaging upon received. If any damage to the carton is visible, or if you find that the inverter unit is damaged after unpacking, please notify the shipping company and PURPLERUBIK NEW ENERGY TECHNOLOGY CO., LTD. immediately. Meanwhile please check the delivery for completeness and for visible external damages of the inverter. If there are anything damaged or missing, please contact your dealer. Don't dispose its original package. If you want to transport the inverter, it is better to store the inverter in the original package. After opening the package, please check all of the accessories carefully in the carton. If anything missing, contact your dealer at once.

Before installation, read this document carefully. PurpleRubik shall not be liable for any consequence caused by violation of the regulations specified in this document.

4.2 Selecting Mounting Location

This is guidance for installer to choose a suitable installation location, to avoid potential damages to device and operators.

- Do not install the inverter near television antenna or any other antennas and antenna cables.
- Do not install the inverter in living area.
- For security reasons, don't install the inverter in place where children can reach.
- Do not put any things on the inverter. Do not cover the inverter.
- The installation location must be suitable for the inverter's weight and dimensions for a long period time.
- Do not install the inverter on structures constructed of flammable or thermo labile materials.
- Never install the inverter in environment of little or no air flow, nor dust environment. That may derate the efficiency of the cooling of the inverter.
- The Ingress Protection rate is IP65 which means the inverter can be installed outdoors and indoors.
- Do not expose the inverter to the sun, storm and snow.
- The humidity of the installation location should be 0~95% without condensation.
- The ambient temperature should be between -25°C and 60°C to ensure optimal operation.
- The installation location must be the place where can be freely and safely got at all times.
- Vertically installation (is degree tilt angle allowed, shown as below) and make sure the connection of inverter must be downwards. Never install horizontal and avoids forward and sideway stilt.

Figure 4.2-1

Figure 4.2-3
• Inverter requires adequate cooling space. Providing better ventilation for the inverter to ensure the heat escape adequately.
• Observe the minimum clearances to walls other inverters or objects, as shown in the diagram below, in order to guarantee sufficient heat dissipation.

4.3 Mounting Procedure

Step 1 Determine the positions for drilling holes using the wall-mounted bracket in the packing case, and mark the hole positions using a marker, as shown in Figure 4.3-1.

Step 2 Drill pilot holes for the wall bracket screws or bolts and attach the wall mount bracket to the wall. Align the bracket with hole positions, insert expansion bolts into the holes, and tighten the bolts to a torque of 10 N.m using a torque wrench.

Step 3 Hang the inverter. Two people must lift the inverter attached the wall mount to the inverter using the top wall mount hanging pin as shown in the illustration and carefully check from both sides whether it is properly installed.

Step 4 Tighten the security pin at the bottom of the inverter and lock it with proper lock, as shown in Figure 4.3-4.
4.4 Grounding

Comply with the local requirements for grounding the modules and the PV generator. PurpleRubik recommends connecting the generator frame and other electricity conducting surfaces such that there is continuous conduction and to connect them to the ground in order to reach maximum protection for property and persons. The inverter must be connected to the AC grounding conductor of the power distribution grid via the ground terminal (PE).

Cable requirement:
Earthing cable cross-section: 3.332 mm² at maximum
Separate the PurpleRubik inverter securely from the grid and the PV generators using DC and AC Switch. You must provide an AC circuit breaker. If PurpleRubik DC Switch is included in the delivery of the PurpleRubik inverter, it must be used for operating the inverter.

WARNING
Because of the transformerless design, neither DC positive pole nor DC negative pole of PV arrays is permitted to be grounded.
4.5 Types of Grid Networks

<table>
<thead>
<tr>
<th>Types</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN-C</td>
<td>YES</td>
</tr>
<tr>
<td>TN-S</td>
<td>YES</td>
</tr>
<tr>
<td>TN-C-S</td>
<td>YES</td>
</tr>
<tr>
<td>TT</td>
<td>YES</td>
</tr>
</tbody>
</table>

4.6 Electrical Connection

4.6.1 Safety

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>Danger to life due to lethal voltages! High voltages which may cause electric shocks are present in the conductive parts of the inverter. Prior to performing any work on the inverter, disconnect the inverter on the AC and DC sides.</td>
</tr>
<tr>
<td>WARNING</td>
<td>Danger of damage to electronic components due to electrostatic discharge. Take appropriate ESD precautions when replacing and installing the inverter.</td>
</tr>
</tbody>
</table>

4.6.2 Connection to Grid (AC)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING</td>
<td>You must install a separate single-phase circuit-breaker or other load disconnection unit for each inverter in order to ensure that the inverter can be safely disconnected under load. NOTE: The inverter is equipped with integrated RCM (Residual current operated monitor) and RCD (Residual current and protective device) which are used for preventing from being electric shock. An external built RCD in fact is not necessary. If the network operator stipulates an external built RCD, you must choose a residual-current protective device that triggers in the event of residual current more than 300mA.</td>
</tr>
</tbody>
</table>

Please connect AC cable obey the following procedures:
1. About the AC plug, please refer to the below form.
<table>
<thead>
<tr>
<th>Model</th>
<th>Max current output</th>
<th>Suggested AC switch spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJ-4KTL-DT</td>
<td>6.4Aac</td>
<td>400Vac/16A</td>
</tr>
<tr>
<td>PJ-5KTL-DT</td>
<td>8Aac</td>
<td>400Vac/16A</td>
</tr>
<tr>
<td>PJ-6KTL-DT</td>
<td>9.6Aac</td>
<td>400Vac/16A</td>
</tr>
<tr>
<td>PJ-8KTL-DT</td>
<td>12.8Aac</td>
<td>400Vac/25A</td>
</tr>
<tr>
<td>PJ-10KTL-DT</td>
<td>15.9Aac</td>
<td>400Vac/25A</td>
</tr>
<tr>
<td>PJ-11KTL-DT</td>
<td>17.5Aac</td>
<td>400Vac/32A</td>
</tr>
<tr>
<td>PJ-12KTL-DT</td>
<td>19.1Aac</td>
<td>400Vac/32A</td>
</tr>
</tbody>
</table>

2. The grid connection is made using 5 conductors, L1, L2, L3, N, and PE. The inverter must be connected to the AC grounding conductor of the power distribution grid via the ground terminal (PE). Please refer to the following form.

![Diagram](image.png)

### Table 4.6.2-1

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>O.D.</td>
<td>12mm-23mm</td>
</tr>
<tr>
<td>B</td>
<td>Conductor Material Sectional Area</td>
<td>4-10mm²</td>
</tr>
<tr>
<td>C</td>
<td>Wire length</td>
<td>45mm around</td>
</tr>
<tr>
<td>D</td>
<td>Bare wire length</td>
<td>12mm</td>
</tr>
</tbody>
</table>

3. Remove the parts of the AC plug from the accessory bag. There are two types – VACONN Series and WIELAND Series, as shown as Figure 4.6.2-2.

![Diagram](image.png)
Installation method of VACONN Series is shown as Figure 4.6.2-3.

Installation method of WIELAND Series is shown as Figure 4.6.2-4.

4.6.3 PV input connections

4.6.3.1 DC Side Connection
1. Specification of DC cable is shown as Figure 4.6.3-1.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>O.D.</td>
<td>4-5mm</td>
</tr>
<tr>
<td>B</td>
<td>Conductor Material Sectional Area</td>
<td>2.5 ~ 4mm²</td>
</tr>
<tr>
<td>C</td>
<td>Bare wire length</td>
<td>7mm around</td>
</tr>
<tr>
<td>D</td>
<td>Individual DC cable</td>
<td>4mm²/PV1-F</td>
</tr>
</tbody>
</table>
2. There are two types of DC connectors, MC4 Series and AMPHENOL H4 Series, as shown in Figure 4.6.3-2.

Installation instruction of MC4 Series and H4 Series, please refer to Figure 4.6.3-3

DC Cable should use dedicated PV cable

4.6.3.2 Connecting the PV array (DC)

| DANGER | ➢ Danger to life due to lethal voltages!  
        | ➢ Before connecting the PV array, ensure that the DC switch and AC breaker are disconnected from the inverter. Never connect or disconnect the DC connectors under load. |
| WARNING | ➢ Improper operation during the wiring process can cause fatal injury to operator or unrecoverable damage to the inverter. Only qualified personnel can perform the wiring work. |
| WARNING | ➢ Risk of damage to the inverter.  
        | ➢ If the voltage of the PV modules exceeds the maximum input voltage of the inverter, it can be destroyed by the overvoltage. This will void all warranty claims. Do not connect strings to the inverter that have an open-circuit voltage greater than the maximum input voltage of the inverter. |
Check the connection cables of the PV modules for correct polarity and make sure that the maximum input voltage of the inverter is not exceeded. At an ambient temperature over 10℃, the open circuit voltage of the PV modules should not exceed 90% of the maximum input voltage of the inverter. Otherwise, the maximum inverter input voltage may be exceeded at low ambient temperatures.

5. Commissioning
Users can change the display language and grid parameters.

5.1 Electrical Check
To ensure operating normally, check the inverter before powering it on. Before powering on the inverter, check that:
1. The inverter is installed correctly and securely.
2. The ground cable is securely connected.
3. All AC output power cables are properly connected.
4. All DC input power cables are properly connected.
5. Unused DC input terminals are sealed.
6. RS485 ports are blocked with waterproof cap.

5.2 Mechanical Check
Step 1 Switch on the AC circuit breaker between the inverter and the power grid.
Step 2 Ensure that the DC SWITCH at the bottom of the inverter is ON.
Step 3 Measure the temperatures at the joints between the DC terminals and the connectors by using a point thermometer.

5.3 Setting Initialization Parameters
When starting the inverter for the first time, set initialization parameters on the monitoring panel. The initialization parameters include the system language, system time, and power grid standard code.

5.4 Startup
The inverter starts up automatically when the DC power from the PV panel is sufficient. If the grid is normal, and PV voltage is within normal range, the inverter will start up automatically and attempt to connect to grid. Usually, there are four operation modes.

5.4.1 Waiting
Inverter is in waiting mode if DC input voltage from panels lower than the lowest operating voltage.

5.4.2 Checking
Inverter will check DC input situation automatically when DC input voltage from the PV panels exceeds lowest operating voltage and PV panels have enough energy to start inverter.

5.4.3 Normal
Inverter begins to work normally with green light on. Meanwhile, feedback energy to grid, LCD displays present output power.

5.4.4 Fault
If there is an error or the voltage is abnormal, inverter will present fault. If the fault cannot be removed or occurred frequently, please check grid connection or contact after-sales service.
6. Operation Instruction

This topic describes the appearance of the monitoring panel, including an LCD, indicator lights and settings of language and standards etc.

6.1 Monitoring Panel

There are three LED indicator lights, a text display and a function button, as shown below.

![Monitoring Panel Diagram](Figure 6.1-1)

<table>
<thead>
<tr>
<th>LED</th>
<th>Function</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>Power</td>
<td>Off</td>
<td>PV voltage low or PV disconnecting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flash</td>
<td>Waiting for startup and connecting to grid</td>
</tr>
<tr>
<td>Green</td>
<td>Run</td>
<td>On</td>
<td>Connecting to grid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On</td>
<td>Inverter is feeding power</td>
</tr>
<tr>
<td>Red</td>
<td>Fault</td>
<td>Off</td>
<td>Inverter is not feeding power at the moment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No fault</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On</td>
<td>Fault occurred</td>
</tr>
</tbody>
</table>

*: The Green and Red will flash when the software is updating.

6.2 LED Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LED( Yellow)</td>
</tr>
<tr>
<td>2</td>
<td>LED( Green)</td>
</tr>
<tr>
<td>3</td>
<td>LED( Red)</td>
</tr>
<tr>
<td>4</td>
<td>LCD Screen</td>
</tr>
<tr>
<td>5</td>
<td>Function Button</td>
</tr>
</tbody>
</table>

6.3 LCD Display and Button

6.3.1 Instruction of Function Button

The monitoring panel provides four control buttons, which is used to scroll the menu item and parameters. Operation definition of the button, please refer to the following chart.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲</td>
<td>Up</td>
</tr>
<tr>
<td>▼</td>
<td>Down</td>
</tr>
<tr>
<td>ESC</td>
<td>Esc</td>
</tr>
<tr>
<td>←</td>
<td>Enter</td>
</tr>
</tbody>
</table>
6.3.2 LCD Display

The LCD display is shown in 16 character X2 lines. The main interface is the default interface. The information of the interface is status of inverter and power. User can select interface by using function button to check status information and setting parameters. LCD Menu structure is shown as below.

Figure 6.3.2
### 6.4 Status and Fault Information

<table>
<thead>
<tr>
<th>Status</th>
<th>Display Info</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wait</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting</td>
<td></td>
<td>Inverter is in waiting mode if DC input voltage from panels lower than the lowest operating voltage.</td>
</tr>
<tr>
<td>Connect</td>
<td></td>
<td>Inverter will check DC input environment automatically when DC input voltage from the PV panels exceeds lowest operating voltage and PV panels have enough energy to start inverter. Inverter will check grid.</td>
</tr>
<tr>
<td><strong>Normal</strong></td>
<td>Normal</td>
<td>Inverter begins to operate normally. Meanwhile, feedback energy to</td>
</tr>
<tr>
<td>Programming</td>
<td>Programming</td>
<td>Inverter firmware update</td>
</tr>
<tr>
<td>GFCI Device Fault</td>
<td>GFCI Device Fault</td>
<td>Hardware circuit fault of ground leakage current</td>
</tr>
<tr>
<td>HCT Device Fault</td>
<td>HCT Device Fault</td>
<td>Hardware fault of inverter current sensor</td>
</tr>
<tr>
<td>Reference Voltage Fault</td>
<td>Reference Voltage Fault</td>
<td>Reference voltage 1.5V sampling fault.</td>
</tr>
<tr>
<td>Consistent GFCI Fault</td>
<td>Consistent GFCI Fault</td>
<td>Leakage current exceeding permissible range</td>
</tr>
<tr>
<td>Consistent DCI Fault</td>
<td>Consistent DCI Fault</td>
<td>Output DC component current exceeds permissible range</td>
</tr>
<tr>
<td>Bus Voltage Out of Range</td>
<td>Bus Voltage Out of Range</td>
<td>Internal busbar voltage exceeding permissible range</td>
</tr>
<tr>
<td>Device Fault</td>
<td>Device Fault</td>
<td>Hardware fault of inverter circuit</td>
</tr>
<tr>
<td>Bus Soft Start Timeout</td>
<td>Bus Soft Start Timeout</td>
<td>Soft start failure of internal bus voltage</td>
</tr>
<tr>
<td>No Utility</td>
<td>No Utility</td>
<td>No utility grid connected or utility grid power failure.</td>
</tr>
<tr>
<td>GFCI Out of Range</td>
<td>GFCI Out of Range</td>
<td>Leakage current exceeding permissible range</td>
</tr>
<tr>
<td>Inverter Current Out of Range</td>
<td>Inverter Current Out of Range</td>
<td>Output current out of software permissible range.</td>
</tr>
<tr>
<td>Inverter Current Hardware Fault</td>
<td>Inverter Current Hardware Fault</td>
<td>Output current out of hardware permissible range.</td>
</tr>
<tr>
<td>Temperate Overrange Fault</td>
<td>Temperate Overrange Fault</td>
<td>Over temperature</td>
</tr>
<tr>
<td>PhotoVoltaic Over Voltage Fault</td>
<td>PhotoVoltaic Over Voltage Fault</td>
<td>Input voltage out of permissible range</td>
</tr>
<tr>
<td>Grid Voltage Out of Range</td>
<td>Grid Voltage Out of Range</td>
<td>Output voltage out of permissible range.</td>
</tr>
<tr>
<td>Isolation Fault</td>
<td>Isolation Fault</td>
<td>Insulation problem</td>
</tr>
<tr>
<td>DCI Out of Range</td>
<td>DCI Out of Range</td>
<td>Output current DC offset too high</td>
</tr>
<tr>
<td>Relay Device Fault</td>
<td>Relay Device Fault</td>
<td>Relay hardware failure</td>
</tr>
<tr>
<td>Relay Check Failure</td>
<td>Relay Check Failure</td>
<td>Relay self-checking failure</td>
</tr>
<tr>
<td>HCT Check Failure</td>
<td>HCT Check Failure</td>
<td>Self-detection failure of current sensor</td>
</tr>
<tr>
<td>GFCI Check Failure</td>
<td>GFCI Check Failure</td>
<td>Detection hardware circuit fault of leakage current</td>
</tr>
<tr>
<td>Grid Frequency Out of Range</td>
<td>Grid Frequency Out of Range</td>
<td>Utility grid frequency out of permissible range</td>
</tr>
<tr>
<td>EEPROM Operation Error</td>
<td>EEPROM Operation Error</td>
<td>EEPROM Rd or Wr Fault</td>
</tr>
<tr>
<td>SPI Communication Fault</td>
<td>SPI Communication Fault</td>
<td>Communication fault Slave processor can't receive data from Master processor.</td>
</tr>
</tbody>
</table>
6.5 Main menu

6.5.1 Initial page
When the inverter starts up, LCD will first display an initial page that shows the current safety standard. The page will display for about 5 seconds and then jump to the home page automatically.

6.5.2 Home page
The home page shows important running data of inverter such as the real-time output power, daily energy, error code, and power graph.
The LCD will switch to standby mode and jump to the home page automatically, and the backlight will turn off when there is no button operation in 30 seconds.

6.5.3 Inverter State
Press "⬇️" button to enter the menu interface. Use "▼" or "▲" buttons to select "Inverter State" and press "⬇️" button to check inverter status.

6.5.4 Energy Yield
Press "⬇️" button to enter the menu interface. Use "▼" or "▲" buttons to select "Energy Yield" and press "⬇️" button to check “Week Yield”, “Month Yield” and “Year Yield".
6.5.5 Settings

6.5.5.1 Language & Time Setting
Press "▼" button to enter ‘Setting’. Press the "▼"or "▲" button to select the "Language & Time Setting" and press the "▼" button to confirm. Use the "▲"or "▼"button to set the year, month, day, hour and minute one by one. Press the "▼" button to confirm.

![Menu]

| Language & Time | Safety Parameters | Power Management | Clear Data |

Figure 6.5.1

6.5.5.2 Safety Parameters
Press the "▲" or "▼" button to enter the “Setting” item of main menu, choose the sub-menu “Safety Parameters” and press the " " button to enter, then a pop-up window for password appears. Enter the correct password and press the " " button to enter the “Safety Parameters” sub-menu page. Please get the correct password from the service engineer.

6.5.5.3 Power Management
Press the "▲" or "▼" button to enter the “Setting” item of main menu, choose the sub-menu “Power Management” and press the " " button to enter, then a pop-up window for password appears. Enter the correct password and press the " " button to enter the “Power Management” sub-menu page. Please get the correct password from the service engineer.

![Power Yield-Week]

Figure 6.5.4
6.5.5.4 Clear Data
Press the "▲" or "▼" button to enter the “Setting” item of main menu, choose the sub-menu “Clear Data”, then enter the correct password, and press the "↓" button to enter the “Clear Data” page. The password for entering the “Clear Data” page could be got from the service engineer.

6.5.6 Event Log
Press "↓" button to enter the menu interface. Use "▼" or "▲" buttons to select "Event Log ".

6.5.7 Device Information
Press "↓" button to enter the menu interface. Use "▼" or "▲" buttons to select "Device Information ".

![Device Information](image)

Figure 6.5.7

7 Communication and Monitoring

7.1 RS485 (Standard)
RS485 is used for single point communication. Use a RS485 cable to connect from inverter's RS485 port to computer's RS485 port, or to connect to a RS485-to-USB converter, then connect to computer's USB port.

![RS485 Cable Connection](image)

Figure 7.1
7.2 WIFI Lite Device (Optional)
WIFI Lite Device (It is available from PurpleRubik.) can be used as an optional monitoring scheme. The ways to install the WIFI modules and to monitor your inverters refer to the WIFI Lite Device manual.

7.3 GPRS Lite Device (Optional)
GPRS Lite Device (It is available from PurpleRubik.) can be used as an optional monitoring scheme. The ways to install the GPRS modules and to monitor your inverters refer to the GPRS Lite Device manual.

8 Maintenance and Cleaning
This section describes the routine maintenance items, intervals and cleaning for the JUPITER SERIES.

8.1 Maintenance

<table>
<thead>
<tr>
<th>Check Item</th>
<th>Check Method</th>
<th>Maintenance Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>System cleaning</td>
<td>Check periodically that the heat sink is free from dust and being covered.</td>
<td>Semiannual or annual</td>
</tr>
<tr>
<td>System running status</td>
<td>Check that the inverter is not damaged or deformed. Check that the running sound of the inverter is normal. During the running, check that all inverter parameters are correctly set.</td>
<td>Semiannual</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>Check that cables are secured. Check that cables are intact and especially the parts touching the metallic surface is not scratched. Check that the idle RS 485 and USB ports are locked by waterproof caps.</td>
<td>The first inspection is half a year after the initial commissioning. From then on, the interval can be semiannual or annual.</td>
</tr>
<tr>
<td>Grounding Reliability</td>
<td>Check that ground cables are secured.</td>
<td>The first inspection is half a year after the initial commissioning. From then on, the interval can be semiannual or annual.</td>
</tr>
</tbody>
</table>

8.2. Cleaning the Inverter
If the inverter is dirty, clean the enclosure lid, the display, and the LEDs using only clean water and a cloth. Do not use any cleaning agents (e.g. solvents or abrasives).
9 Dismantling the Inverter

9.1 Dismantling the Inverter

1. Disconnect the inverter.
   Disconnect the line circuit breaker from single phase and prevent it from being reactivated.
   Turn off the DC switch.
   Check the inverter operating status.
   Waiting until LED and Display have gone out, the inverter is shut down.

2. Remove all connection cables from the inverter.

3. Screw off all projecting cable glands.
4. Lift the inverter off the bracket and unscrew the bracket screws.

9.2 Disposing of the Inverter

Danger of burn injuries due to hot enclosure parts!
Wait 20 minutes before dissembling until housing has cooled down.

3. Screw off all projecting cable glands.
4. Lift the inverter off the bracket and unscrew the bracket screws.

9.2 Disposing of the Inverter

Do not dispose of faulty inverters or accessories together with household waste.
Please accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner.

10. Troubleshooting

Sometimes, the PV inverter does not work normally. We recommend the following solutions for common troubleshooting. The following table can help the technician to understand the problem and take action.

10.1 Warnings (W)

Warnings (W) identify the current status of the inverter. Warnings do not relate to a fault. When a (W) with a number after it appears in the display, it indicates a Warning Code and is usually cleared through an orderly shutdown/ reset or a self corrective action performed by the inverter. See the (W) codes in the following table.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
<th>Suggested Actions</th>
</tr>
</thead>
</table>
| Isolation Fault                 | Insulation problem                              | 1. Check if inverter ground properly.  
2. Check if the DC breaker gets wet.  
3. If the error message is displayed despite the above checking passed, contact PurpleRubik. |
| No Utility                      | No utility grid connected or utility grid power failure. | 1. Check AC connection.  
2. Check AC wiring.  
3. Check grid usability.  
4. If the error message still exists, please contact PurpleRubik. |
| PhotoVoltaic Over Voltage Fault | Input voltage out of permissible range           | 1. Check if DC open circuit voltage > 1000V  
2. If the error message still exists when DC open circuit voltage < 1000V, please contact PurpleRubik. |
| Grid Voltage Out of Range       | Output voltage out of permissible range          |                                                                                   |
| Grid Frequency Out of Range     | Utility grid frequency out of permissible range   | 1. Wait 5 minutes. The inverter will start automatically when grid is normal.  
2. Ensure the grid voltage and frequency meet the local standard |
| Consistent GFCI Fault           | Leakage current exceeding permissible range      | 1. Restart inverter.  
2. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| GFCI Out of Range               | Leakage current exceeding permissible range      | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| GFCI Device Fault               | Hardware circuit fault of ground leakage current  | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| HCT Device Fault                | Hardware fault of inverter current sensor        | 1. Please check if installation position conforms to the specification.  
2. Try to lower the surrounding temperature.  
3. Move the inverter to vents or alter the installation position.  
4. If the problem still exists, please call service office. |
| Temperate Overrange Fault       | Over temperature                                 | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| Reference Voltage Fault         | Reference voltage 1.5V sampling fault.           | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| Consistent DCI Fault            | output DC component current exceeds permissible range | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
| Bus Voltage Out of Range        | Internal busbar voltage exceeding permissible range | 1. Disconnect DC connection and wait.  
2. Restart the inverter.  
3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik. |
<table>
<thead>
<tr>
<th>Error Type</th>
<th>Description</th>
<th>Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Voltage Out of Range</td>
<td>Internal busbar voltage exceeding permissible range</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>Device Fault</td>
<td>Hardware fault of inverter circuit</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>Bus Soft Start Timeout</td>
<td>Soft start failure of internal bus voltage</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>DCI Out of Range</td>
<td>Output current DC offset too high</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>Relay Device Fault</td>
<td>Relay hardware failure</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>GFCI Check Failure</td>
<td>Detection hardware circuit fault of leakage current</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>EEPROM Operation Error</td>
<td>EEPROM Rd or Wr Fault</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
<tr>
<td>SPI Communication Fault</td>
<td>Communication fault Slave processor can't receive data from Master processor</td>
<td>1. Disconnect DC connection and wait. 2. Restart the inverter. 3. If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact PurpleRubik.</td>
</tr>
</tbody>
</table>
10.2 Diagnosis and Solutions

**Error 1. No Display**

Solution:
1. Disconnect the DC switch, take off DC connector, measure the voltage of PV string.
2. Plug in DC connector, and reconnect DC switch.
3. If the voltage is less than 70V, please check the PV string configuration.
4. If the voltage is higher than 125V and still no display, please contact local service office.

**Error 2. No Utility**

Solution:
1. Check AC wiring.
2. Contact PurpleRubik.

**Error 3. DC Over Voltage**

Solution:
Check whether the large number of PV modules connected in series make the open circuit voltage of the PV arrays greater than the maximum input voltage of the PM-1500~3000TL-SS/PV-3000~5000TL-DS. If yes, adjust the number of PV arrays connected in series to decrease the output voltage of PV arrays to meet the voltage requirements for the inverter. If no, contact PurpleRubik technical support.

**Error 4. Isolation Fault**

Solution:
1. Check the insulation resistance against the ground for the outputs of PV arrays. If a short circuit occurs, rectify the fault.
2. If the insulation resistance against the ground is less than the default value in a rainy environment, set the insulation resistance threshold.

**Error 5. GFCI Failure**

Solution:
1. Check that the neutral wire and ground cable are proper.
2. When PV arrays are grounded, check whether the inverter needs to connect to an isolation transform

**Error 6. Consistent Fac/Vac**

Solution:
1. If the alarm occurs accidentally, the possible cause is that a power grid is abnormal accidentally. The inverter automatically recovers to the normal operating status after the fault is rectified.
2. If this alarm occurs repeatedly, check whether frequency of the power grid is within the acceptable range. If no, contact the local power operator. If yes, change the power grid over frequency and under frequency protection points after obtaining approval from the local power operator.
Error 7. Relay Failure
Solution:
Disconnect the DC and AC sides immediately and shut down the inverter over 30mins. If the inverter starts and works normally, keep using. If no, please contact PurpleRubik service for help.

Error 8. Utility Loss
Solution:
1. Disconnect the DC switch, take off AC connector, measure the voltage between line and neutral connector, make sure if it conforms to the grid-connected specification of inverter.
2. If it does not, please check if the distribution switch is connected and the grid is normal.
3. If it does, reconnect AC connector and DC connector; if the problem still exists, please call the local service office.

Error 9. Over Grid Voltage
Solution:
1. Check whether the feed grid point voltage is too high, if it is, contact your local power operators.
2. If confirming feed grid point voltage is higher than the permissible scope of consent and the consent of the local power operators, modify the under voltage protection point.
3. Check whether the grid voltage peak is too high.

11. Certificates and Service

11.1 Certificates

Production monitored
Safety tested

11.2 Service

Warranty
During the warranty period, the user should provide the invoice and date. The signs on the products should be clear. Otherwise, PurpleRubik will not be liable for the quality assurance. The standard warranty period of this product is 60 months after it is unpacked and accepted. You can also buy extended warranty. The start time must be within 30 days after the delivery date. The contract prevails if it specifies the warranty.

Quality Assurance Regulations
PurpleRubik maintains or replaces the equipment freely if the equipment becomes faulty within the warranty period.
Return the faulty or damaged equipment to PurpleRubik.
Disclaimer
Damage caused during transportation.
Incorrect installation.
Misoperation.
Damage caused by abnormal natural environments.
Operation under severe environments which are not specified in this document.
Unauthorized product changes and software code modification.
Usage under installation and operating environments which are not specified in related international specifications.
Ignorance of the safety precautions and regulations specified in this document.

12. Contact

If you have technical problems about our products, contact the PurpleRubik Service line. We need the following information in order to provide you with the necessary assistance:
Inverter type
Serial number of the inverter
Event number or display message of the inverter
Type and number of PV modules connected
Optional equipment

PURPLERUBIK NEW ENERGY TECHNOLOGY CO., LTD.
Address: No.116 Chengyang Rd. Suzhou, P.R. China, 215100
Tel: 0086 400 928 1628
Fax: 0086 512 6957 6040
Email: customercare@purplerubik.com
Website: http://www.purplerubik.com