User’s Manual

SAFETY INSTRUCTIONS

1. Make sure your battery has enough voltage for the controller to recognize the battery type before first installation.
2. The battery cable should be as short as possible to minimize loss.
3. The regulator is only suitable for lead acid batteries: OPEN, AGM, GEL. It is not suited for nickel metal hydride, lithium ions or other batteries.
4. The charge regulator is only suitable for regulating solar modules. Never connect another charging source to the charge regulator.

PRODUCT FEATURES

1. Build-in industrial micro controller.
2. Big LCD display, all adjustable parameter.
3. Fully 4-stage PWM charge management.
5. Dual mosfet Reverse current protection, low heat production.

LCD DISPLAY/KEY

1. Digital display, 2. Battery type, 3. Battery charge/discharge
4. System connection, 5. Work mode

SYSTEM CONNECTION

1. Connect the battery to the charge regulator - plus and minus.
2. Connect the photovoltaic module to the regulator - plus and minus.
3. Connect the consumer to the charge regulator - plus and minus.
   The reverse order applies when deinstalling! An improper sequence order can damage the controller!

DISPLAY/SETTING

1. Main display, 2. Float voltage, 3. Battery type
4. Battery charge/discharge, 5. Work mode

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DISPLAY/SETTING

1. Main display, 2. Float voltage, 3. Battery type
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INSTRUCTIONS

1. Connect: 1. press the [Down] button to ON/OFF load manually at main display.
   2. The work mode is working as below:

TRoubleshooting

<table>
<thead>
<tr>
<th>Situation</th>
<th>Probable cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge icon not on when sunny</td>
<td>Solar panel opened or reversed</td>
<td>Reconnect</td>
</tr>
<tr>
<td>Load icon off</td>
<td>Mode setting wrong</td>
<td>Set again</td>
</tr>
<tr>
<td>Load icon slow flashing</td>
<td>Over load</td>
<td>Reduce load watt</td>
</tr>
<tr>
<td>Load icon slow flashing</td>
<td>Short circuit protection</td>
<td>Auto reconnect</td>
</tr>
<tr>
<td>Power off</td>
<td>Battery too low/reverse</td>
<td>Check battery/connection</td>
</tr>
</tbody>
</table>

TEhNICAL PARAMETER

<table>
<thead>
<tr>
<th>MODEL</th>
<th>KLD1210</th>
<th>KLD1220</th>
<th>KLD1230</th>
<th>KLD4820</th>
<th>KLD4830</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batt voltage</td>
<td>12V/24V auto</td>
<td>48V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge current</td>
<td>10A</td>
<td>20A</td>
<td>30A</td>
<td>20A</td>
<td>30A</td>
</tr>
<tr>
<td>Discharge current</td>
<td>10A</td>
<td>20A</td>
<td>30A</td>
<td>20A</td>
<td>30A</td>
</tr>
<tr>
<td>Max Solar input</td>
<td>&lt;50V</td>
<td>&lt;80V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equalization</td>
<td>B01 sealed</td>
<td>B02 Gel</td>
<td>B03 flood</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.4V</td>
<td>14.2V</td>
<td>14.6V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Float charge</td>
<td>13.7V(defaul,adjustable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge stop</td>
<td>10.7V(defaul,adjustable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge reconnect</td>
<td>12.6V(defaul,adjustable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB output</td>
<td>5V/3A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-consume</td>
<td>&lt;10mA</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Operating temperature</td>
<td>-35~+60℃</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SizE/Weight</td>
<td>150<em>78</em>35mm /150g</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* all red color voltage X2, X4 while using 24V /48V system.
* Product specifications are subject to change without prior notice.