

Range KDG ENERGY KDE P60 / KDE M60

Installation & maintenance instructions
Solar modules
07/2011

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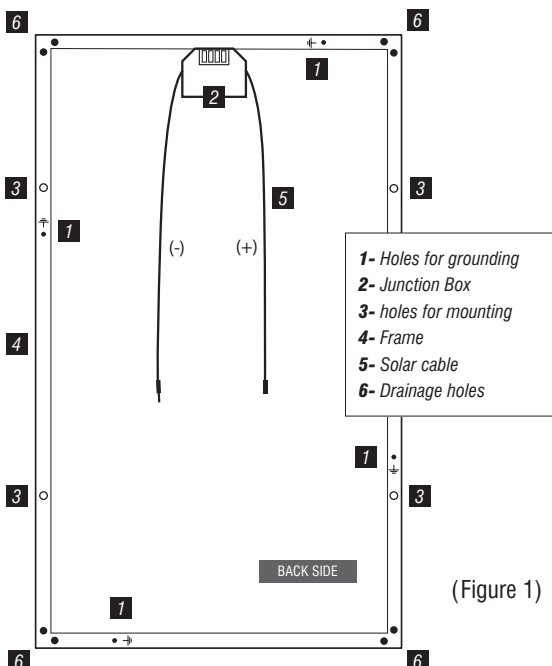
1. About these instructions

These instructions contain directives for a safe handling of KDG ENERGY solar modules (Series KDE P60 and M60). They are for qualified electricians and provide safety instructions for assembly, connection and maintenance of solar modules.

IMPORTANT NOTE

The assembly of solar modules can only be performed by qualified electricians. Appropriately qualified technicians must always be deployed to service the units or remedy faults during operation.

Please read these instructions carefully before handling solar modules and familiarize yourself with the security instructions. Once the solar module is installed, hand over the instructions to the end user for safe keeping.



2. Description of solar modules

2.1 Authorized Use

Solar modules convert sunlight into electricity through the photovoltaic effect. The solar modules are primarily designed for connection to the electricity grid through an inverter. When connecting the charge controller, please follow the instructions of the charge controller and battery manufacturers.

Several solar modules can be connected in series or parallel. Solar modules can't be connected directly to an electrical device.

2.2 Description

The solar modules are equipped with an aluminum frame with holes for mounting and grounding. For electrical connection, the solar modules have a connection box and solar cables with connectors. See Figure 1 of this document. The solar modules are equipped with bypass diodes. In case of occultation, they minimize losses and avoid damage to the solar modules. The modules contain no blocking diodes that prevent the battery to discharge at night. The discharge of the battery can be avoided by using a charge controller with overnight shutdown function. The solar modules match the class A application according to IEC/EN61730-1

3. Security

Solar modules generate electricity and are under voltage when they are exposed to light. A single module Solar produces a voltage of less than 50VDC. If several modules are connected in series, the voltages of individual modules accumulate and can pose a hazard.



Danger !

- Danger of electric shock on contact with defective solar modules
- Always wear rubber gloves before manipulating modules whose front glass is cracked or broken or if the backsheet seems damaged
- Only touch damaged solar modules if it is absolutely necessary



Warning!

- Risk of falling when working on roofs
- Use appropriate protection against falls
- Observe the accident prevention regulations
- Do not perform assembly work in high winds or wet weather



Warning!

- Risk of injury from falling objects
- Mark the ground with a security zone, closed to pedestrians, before the start of assembly work
- Measures to prevent children from entering the safety zone must be taken



Warning!

To avoid damages to the solar module, please observe the following:

- Do not use paint or glue on the back of the solar module
- Do not use the junction box or the cables as carrying handle
- Do not expose the module to concentrated light
- Do not allow any objects to fall upon the solar module
- Avoid scratching the front glass.

4. Assembly



Warning!

Installation work may only be performed by qualified personnel.

4.1 Safety for installation



Warning!

- KDG ENERGY Solar modules are not protected against explosions.
- Do not install the solar module near gas or flammable vapors



Danger !

- Risk of death in case of contact with parts under voltage.
- Do not install damaged solar modules
- Never connect or disconnect connection sockets when under voltage.



Warning!

- The solar modules need to be manipulated as carefully as for glass.
- Stepping on solar modules is not allowed.

4.2 Preparing the installation

For their final installation, the solar modules require an appropriate mounting structure.

Follow carefully the manufacturer's instructions of the mounting structure that you choose .

4.3 Mounting of the solar module

- Please observe the following during assembly:
- To ensure a proper ventilation, the frame of the module solar must be at a minimum distance of 15 mm of the mounting structure
- The frames of adjacent modules must be within a least 5 mm to allow for thermal expansion
- Solar modules can be installed vertically or horizontally

- In case of heavy snow accumulation on the bottom row modules of the photovoltaic system, the lower part of the module may be damaged. Reinforcement of modules positioned at the bottom row could be considered in order to avoid this. When choosing materials for the mounting system, the electrochemical chain must be respected to avoid corrosion between different metals.
- Attach the modules to a strong mounting system designed to withstand the local wind and accumulated snow loads.
- Solar modules should be mounted on the structure using 4 mounting points or on two opposing lines, points or lines lying in a same plane.

4.3.1 Mounting with screws

Assembly material:

- Stainless steel screws Ø8, 4 pcs
- Stainless steel M8 nuts with locking teeth, 4 pcs.



Warning!

No holes may be drilled on the frame the module.

Procedure:

- Check out the positions of the mounting holes on the figure 1 of this document.
- Make the necessary mounting holes on the structure frame.
- Tighten the screws with the appropriate torque (Usually 12.5 Nm).
- Please follow the screws manufacturer's instructions.

4.3.2 Fixing clamps

Fixing clamps

- Mounting Clamps protected against corrosion (at least 4 pcs)

Remark

- The clamps are to be used in ways that they do not touch the glass top or distort the frame.
- Avoid any shading when positioning the clamps.
- The attachment must be strong enough to withstand the maximum load that depend on the local environmental conditions. (A minimum cover of 7 mm on a surface of the frame of at least 360 mm² per each of the clamps must be respected).
- It is prohibited to alter the frame of the solar module
- The vents in the module frame should always remain clear.
- The solar modules should not be in contact with standing water.
- Electrical cables should be attached to the mounting structure in ways that ensure that the connectors are not staying under any flow of water. Protect the connectors from dirt.

Procedure:

- ✔ Set the position of the clamps according to the diagrams on page 4.
- ✔ Tighten the clamps with the torque specified by the manufacturer.
- ✔ Attach the modules firmly with systems fasteners designed to withstand the local wind and weight of accumulated snow.

5. Electrical connection



Warning!
The electrical connection can only be performed by qualified electricians.



Danger !

- Risk of death in case of contact with parts under voltage.
- Do not connect or disconnect contacts under voltage
- Always use dry and insulated tools for the electrical installation.
- Never touch parts under voltage with naked hands.
- Do not wear metal jewelry.



5.1 Wiring the solar modules

- Only the solar modules of the same type and same power can be connected in series.
- To achieve the electrical connection of solar modules, there is no need to open the junction box.
- The maximum system voltage of interconnected solar modules cannot exceed 1000 VDC.
- Under normal conditions, a photovoltaic module can produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of ISC and VOC marked on this module should be multiplied by a factor of 1,25 when determining component voltage ratings, conductor current ratings, fuse sizes, and size of controls connected to the PV output
- Solar modules are equipped with solar cables of 4 mm².
- The cables are equipped with RADOX SOLAR twist lock connectors. These connectors only should be used for the series connections. For other connections, always use special solar cables with a minimum diameter of 4 mm² and RADOX SOLAR twist lock.
- Ensure a correct polarity and a good connection of the connectors. Any reverse polarity will destroy the protection diodes.
- Observe the minimum curve radius of 24.5 mm when using the solar cables.

5.2 Connection of solar modules

Follow the inverter manufacturer's instructions when connecting the solar module to the inverter.

5.3 Grounding of solar modules

To reduce the risk of electric shock, the frames of solar modules should be grounded.

Assembly material:

- Self-tapping stainless screw PZTCBL 5.5 x 16 DIN 7981
- Adapted grounding cable
- Procedure
- ✔ Check out the positions of the holes for grounding on Figure 1 of this document.
- ✔ Screw the grounding cable to one of these holes with a stainless steel screw.

6. Maintenance

6.1 Safety procedure when working on roofs



Danger !

- Use appropriate protection against falls
- Observe the accidents prevention regulations

6.2 Cleaning of solar modules

When they are sufficiently tilted (> 15 °), it is not necessary to clean the solar modules, which are washed by rain.

If very dirty, we recommend cleaning the modules with plenty of water, a neutral cleaner and a soft cloth or soft sponge. Do not use any high pressure cleaning equipment.

6.3 Maintenance of solar modules

The following items should be checked once a year:

- Good and no corrosion of fasteners
- Good connection, cleanness and absence of corrosion of all cable connections
- Perfect condition of the cables and the front glass.

7. Disclaimer

The " PV Modules Warranty " of KDG ENERGY does not apply in case of non-compliance with these installation and maintenance instructions.

KDG ENERGY assumes no liability for damages caused by improper use or errors during assembly, control, operation or maintenance.

The French edition of these installation and maintenance instructions version is binding.

8. Customer Service / Contact

KDG ENERGY – Sales office

11, avenue du Général Leclerc
92100 Boulogne Billancourt - France

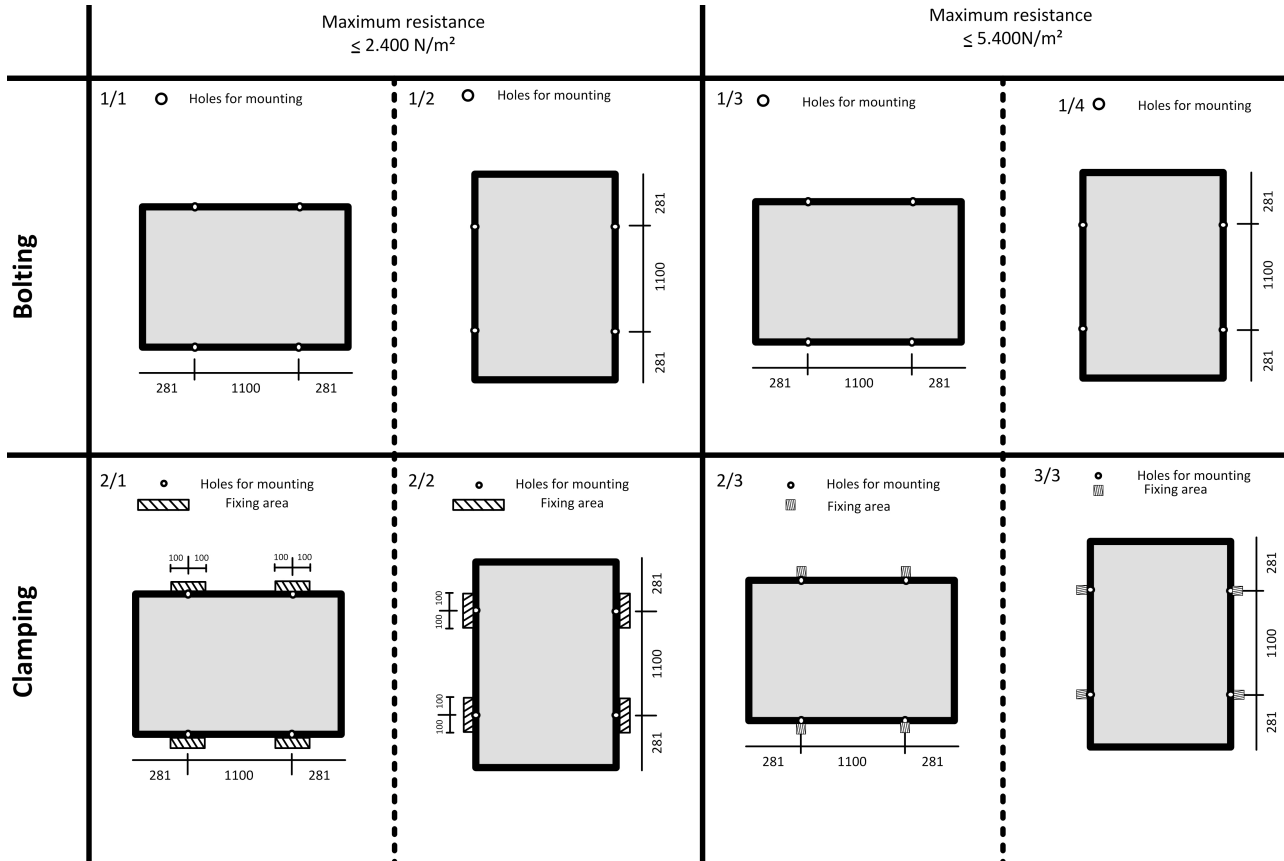
Factory and engineering office

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9. Authorized types of fixing

Séries KDG ENERGY KDE P60 / KDE M60





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