

Active façade & skylight systems



Installation, Maintenance and Safety | **Manual**

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1. Application

This manual is only applicable for building integrated photovoltaic glass units commercialized and supplied by E-ACTIV. The products are qualified for application class A: Hazardous voltage (IEC 61730: higher than 50V DC; EN 61730: higher than 240W) where general contact access is anticipated (modules qualified for safety through EN IEC 61730-1 and -2 within this application class are considered to meet the requirements for Safety Class II).

Please read and understand this guide prior to the installation. If you have any questions, please contact our sales department. Please conform to all the safety precautions in the guide when installing our photovoltaic glass units. Local codes should also be followed during installation.

2. Warnings

Before handling, installing or using the photovoltaic glass unit, it is important to read and comply with the information provided hereafter. In case of doubts, contact a specialist. This manual should be kept for the full working life of the photovoltaic glass units.

Electric shocks – This product generates an electrical current when its front side is exposed to sunlight.

Even if voltage and current from a single module are low, touching terminals or wiring may cause shock or burns (this risk increases when several modules are installed together). To avoid any risk, the glass units are supplied with protected terminals using connectors. It is in this way not possible to come in direct contact with the terminals or wiring.

Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of I_{sc} and V_{oc} marked on this module should be multiplied by a factor 1,25 when determining component voltage ratings, conductor current ratings, fuse sizes and size of controls connected to the photovoltaic module output.

3. Store and handling

Although this product has been designed to be sturdy, it is preferable to handle it with care:

- Significant irreparable damage can be caused by impact on the front or back surface, on the edges and on the junction box.
- Handle the module by means of appropriate equipment (e.g. glass carrier suckers).
- Systems should be installed by qualified personnel only. The installers should understand the risk of all injury that might occur during installation, including, without limitation, the risk of electric shock and falling.
- Photovoltaic glass units produce direct current when exposed to light. Even if they are not connected to the grid a high voltage can be present on the module terminals when modules are connected in series.
- Contact with active electrical parts can cause sparks, fire or electrical shock.
- Use appropriate working clothes and insulated gloves.
- Store the glass units on edge with junction box up. Never put the photovoltaic glass unit resting on the edge connectors.
- Connectors must be dry and clean, do not install under inappropriate weather conditions.
- Never connect or disconnect connectors under load.
- Warning, a broken module may generate electrical shock risks.
- Do not stand or step on the glass unit.

- Do not disassemble the photovoltaic glass unit and do not remove any attached components.
- Do not shadow the active side of the photovoltaic glass unit.
- Use only insulated tools that are approved for working on electrical installations.
- When installing the system abide with all local, regional and national statutory regulations.
- Artificially concentrated sunlight shall not be directed on the photovoltaic glass panel.

4. Installation and fastening

Install the module horizontally or vertically with junction box at the top or on the side and the active side towards the sun.

The module can be fixed by full-length or short clamps on four, three or two sides following the design requirements, environmental conditions of the system (wind, snow ...) and the integration system and after confirmation of the validity of this solution (module + integration system) according to local regulations.

Never place the module resting on a metal structure without interlayer (EPDM, TPE, neoprene, silicone, etc...)

Leave enough space behind the module to allow proper ventilation by free air flow. This is specially the case for spandrel, cladding and ventilated façade applications.

Before applying the cover pressure plates make sure you have measured the DC voltage of each string and have verified the values with the supplier for its approval.

5. Product identification

Every delivery must contain:

- The photovoltaic glass units
- The wire sets for the wiring between the glass units
- The string cables for the connections between the glass units and the inverters
- An identification list with the serial numbers of all the glass units
- Eventually DC & AC switch panels and inverters

Each glass unit has a unique serial number which can be found on the label on each module.

6. Electrical installation

6.1. PE Earth

If applicable, the structure must be connected to Earth according to local regulation. The glass units themselves do not need to be grounded.

If in doubt, consult an electrician or the structure manufacturer and check local regulations to determine the suitable earthing technique.

6.2. Wiring

- Follow the requirements of applicable local and national electrical codes.
- The electrical specifications of the modules are on the datasheet accompanying the delivery of the glass units or sent to you separately.
- Only modules with the same current (I_{sc} and I_{mpp}) should be connected in series.
- For strings connected in parallel take proper measures to block reverse current flow.
- Never connect or disconnect connectors under load.
- Connect only the number of modules that is suitable for the connecting device (inverter, switch panel)
- Maximum open circuit voltage of the system must never be higher than the maximum system voltage of the BIPV modules (1000 Volt). Take in account the voltage of the panels with the temperature coefficients as on the datasheet.
- Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of I_{sc} and V_{oc} marked on the datasheet should be multiplied by a factor 1.25 when determining component voltage ratings, conductor current ratings, fuse sizes and size of controls connected to the PV output.
- The limiting reverse current load for the modules is 15A.
- Make sure the polarity of interconnections is correct.
- Avoid every risk of electrical shock.
- Cables should be as short as possible to reduce voltage drop and lower system performance.
- Wiring must be supported or fixed.
- Avoid loop of electrical cables to decrease the risk of indirect lightning strike.
- Regularly check the open circuit voltage V_{oc} during installation of the glass units to verify the quality of the connections.
- Before connecting the total BIPV system, check the open circuit voltage V_{oc} . Don't touch the electrical contacts!
- After starting up the total PV system, check all the electrical values. If these values are deviating from the expected values the connections have to be verified.
- All BIPV modules are supplied with factory installed bypass diodes to minimize heating and array current losses in case of (partial) shading.
- Do not expose the modules to concentrated sunlight.

a) Edge Junction Box Connector

The SEJB2BSR SERIES side-Edge Junction Box (Normal Type)
 Size: L160 x W10 x H10,5 mm
 Protection class: Class II and IP67
 Rating current: 20 A
 Operating temperature: -40°C tot 80°C

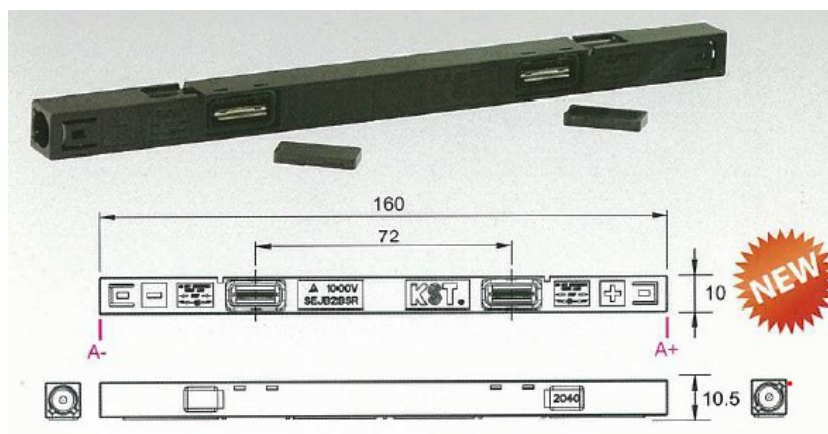


Figure 1

a) Connector Latch

When mating the Socket connectors, ensure the following:

Connectors labeled with a + (red rubber) or – (black rubber) are keyed and can only be mated to similarly marked side on Edge Junction Box.

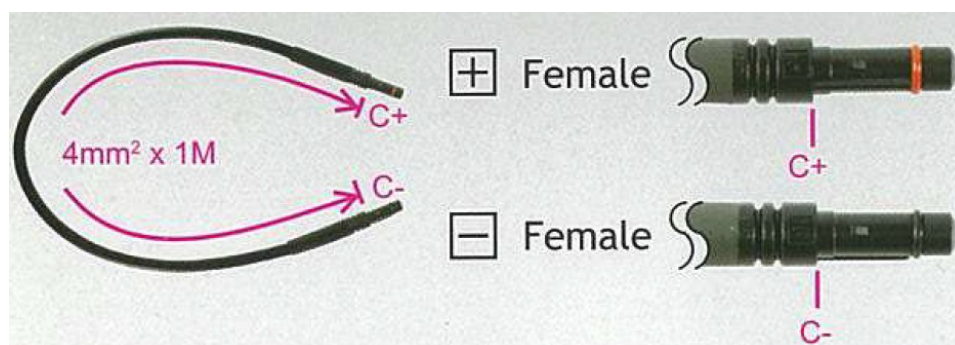


Figure 2

b) Connecting of the Cable Connector into the Junction Box

Only connect the Cable Connectors into the Junction Boxes of the glass units when the glass units are positioned in the appropriate mounting structure.

The cable connectors and the junction boxes are marked with + and – signs.

The + cable connector must be connected in the + side of the junction box and the – cable connector must be connected in the – side of the junction box.

The connections which are available for cable connection are open to connect. The other connections are blocked with plugs.

The connector must fit in the junction box very smoothly and at the end you hear a “click”-sound.

c) Disconnecting

CAUTION: Do not disconnect the connector under load!

Unmating of the Cable Connector:

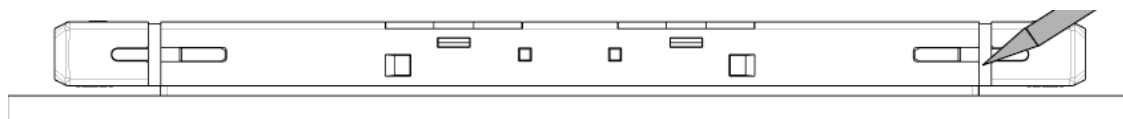


Figure 3

- To unlock use the screwdriver, push it in the gap and lift it up.
- Pull out the connectors

7. Maintenance

- Regularly check the modules
 - o Visual check
 - o Firm mounting
 - o Electrical contacts
 - o Output follow up
 - o Change of surroundings (e.g. sources of shadow)
- Clean the front side of the module at least once a year with clear water. Never use any greasy substance,
- detergent or abrasive instruments. Inspect the module to check that all connections and fixing are
- corrosion free once per year. Avoid snow accumulation on and under the modules.

8. Disclaimer of liability

This installation manual contains expedient tips on installing the solar modules from E-Activ. In addition to this information, the installing company must observe the applicable regulations and rules of engineering. E-Activ assumes no liability for system/inverter sizing conducted by the client without verification by E-Activ's engineers. E-Activ reserves the right to change the manual, the product, the specifications, or product information sheets without prior notice.

Note: Anything else not expressly indicated needs to be verified with the supplier.