INSTALLATION HANDBOOK

GIOCO SOLUTIONS®

CONGRATULATIONS ON YOUR

GIOCO SOLUTIONS®

MODULE PURCHASE

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INTRODUCTION

The installation of the photovoltaic modules can be done by anyone with a little handiness in manual work.

The installer assumes, however, all the possible risks that may occur during installation.

THE INSTALLATION INSTRUCTIONS DESCRIBED HEREIN ARE ONLY INDICATIVE. FOR ANY DOUBT WOULD YOU, PLEASE, CONSULT OUR WEB SITE: giocosolutions.com OR CONTACT US THROUGH THE INFO.

SAFETY

WARNINGS AND ELECTRICAL HAZARDS

All instructions should be read carefully and understood before proceeding with the installation, connection, use and maintenance of the photovoltaic module.

- ✓ In the event that more panels are connected in series, ensure that the voltage is less than 70 volts, otherwise, the contact with the connectors could produce harmful electric shock and / or death.
- ✓ Before installing the module check the need for any permits and / or concessions required by current legislation.
- ✓ Unless otherwise specified, it is recommended to comply with the most recent national l or international laws.
- ✓ The panel must remain in its packaging until installation.
- ✓ Incorrect installation can compromise the entire system. Additional equipment may be required such as grounding, fuses, lightning arresters, disconnectors, etc..
- ✓ Do not use different types of modules in the same system.
- ✓ Do not stress out the form with mechanical stress, do not drop or throw objects out the form, do not walk on it with sharp high heel shoes.
- ✓ Do not apply paint or adhesive on the form.
- ✓ Do not concentrate sunlight or other sources of artificial light on the forms.
- ✓ Always work on the modules in dry conditions, even for tools.
- ✓ Use tools properly covered with insulating material during the electrical connection of the modules.
- ✓ Fully cover the surface of the module with blackout material during installation, removal or maintenance, one PV module generates electricity when exposed to light.
- ✓ Avoid electrical shock during installation, wiring, maintenance of the form.
- ✓ Do not touch the terminals when the module is exposed to light, provide for the installation with appropriate means of protection to prevent electric shock.
- ✓ Do not install the module where flammable gases or vapors are present, or when dangerous sparks may occur.
- ✓ Do not allow children to approach to the module when it has to be installed.
- ✓ A module that is damaged in some way must never be installed and used.
- ✓ Use the panel only for the purpose for which it was designed.
- ✓ Follow all manufacturer's instructions.
- ✓ Do not dismantle or remove any part or label affixed by the manufacturer.

GIOCOSOLUTIONS FLEXIBLE PANELS

CONTENTS OF THE PACKAGE

One or more Giocosolutions flexible panels, customized as required.

Structural bi adhesive

Eyelets

Tenax

Wires and MC 4 connectors

Charge regulator, if needed.

TECHNICAL DATA

Giocosolutions has developed, patented and produce solar PV flexible panels, made with an innovative cell technology .
It is made of cells with polymers, characterized by a higher level of efficiency and a weight of about 1/8 compared to traditional glass panels.
The innovative contacting technology, combined with monocrystalline "Full Square"cells, gives to these panels the highest level of efficiency in the world.
The result is a highly efficiency, lightweight, capable of becoming integrated part of the casing and adapt any architectural work, flexible panel.

WALK ON PANELS
possibility of walking on panels thanks to the use of high resiliency techno-polymers

MICROCRAKING MANAGING
thanks to intercontacts Day4 technology

LIGHTNESS
1/8 weight than classical glass panels

HIGH RESISTANCE
to saline mist

INNOVATIVE BACK-SHEET
5 layered aluminium

MONOCRISTALLIN PANELS

HIGH EFFICIENCY

Thanks to the use of monocrystalline “Full Square” cells with an efficiency about 20%.

Electrical characteristics	GSC 150	GSC 170	GSC 85	GSC 95	GSC 75	GSC 75 Q
V PMAX (V)	18,56	20,88	10,44	11,60	9,28	9,28
I PMAX (A)	8,16	8,16	8,16	8,25	8,16	8,16
PMAX (Watt)	151,45	170,38	85,19	95,64	75,72	75,72
VCA (V)	20,80	23,4	11,70	13,00	10,40	10,40
ICC (I)	8,45	8,45	8,45	8,54	8,45	8,45
EFFICIENCY %	16,44	16,62	15,91	16,22	15,74	15,70
Dimensions	**GSC 150**	**GSC 170**	**GSC 85**	**GSC 95**	**GSC 75**	**GSC 75Q**
H (mm)	1375	1530	1530	880	1375	720
L (mm)	670	670	350	670	350	670
S (mm)	1,5	1,5	1,5	1,5	1,5	1,5
WEIGHT (Kg)	2,31	2,6	1,34	1,45	1,21	1,21

POLICRISTALLINE PANELS

MORE ENERGY EVERY DAY

Thanks to the use of low metallization cells and last generation engineering plastics.

Electrical characteristics	GSP 130	GSP 145	GSP 65Q	GSP 65L	GSP 73L	GSP 80 Q
V PMAX (V)	16,64	18,75	8,32	8,32	9,36	10,4
I PMAX (A)	7,87	7,87	7,87	7,87	7,87	7,87
PMAX (WATT)	131,0	147,36	65,50	65,50	73,68	81,87
VCA (V)	19,84	22,32	9,92	9,92	11,16	12,40
ICC (I)	8,16	8,16	8,16	8,16	8,16	8,16
EFFICIENCY %	14,22	14,38	13,58	13,86	13,94	13,89
Dimensions	**GSP 130**	**GSP 145**	**GSP 65Q**	**GSP 65L**	**GSP 73L**	**GSP 80Q**
H (mm)	1375	1530	720	1375	1530	880
L (mm)	670	670	670	350	350	670
S (mm)	1,5	1,5	1,5	1,5	1,5	1,5
WEIGHT (Kg)	2,31	2,60	1,21	1,21	1,34	1,45

INSTALLATION

RECOMMENDATIONS

The modules have to be glued to art, strictly following these instructions.

BE VERY CAREFUL NOT TO NEVER BEND OVER THE PV MODULE: CURVES THAN 25% CAN DAMAGE THE CELLS OR THE FORM.

The structure on which is pasted the module must be able to withstand, without deformation, weathering even violent, such as snow and wind and, in the case of marine applications, salt and storm surges.

The support on which the module is secured, in any case, should not be subject to any kind of twist. Flexing or bending of the support repeated over time, can cause irreparable tears of the components of the module, reducing the yield or even making it completely inactive.

The module must be installed so that air can circulate freely at least on the side facing the sun. This reduces the operating temperature and increases performance.

The sections of electrical wires for the connections must be sufficient to ensure that the voltage drop does not exceed 1% of the rated voltage.

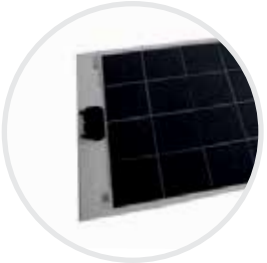
We recommend the use of fire-resistant cable suitable for outdoor applications.

BONDING MODULE

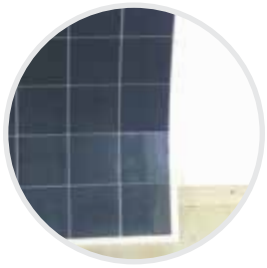
The bonding of the modules should be performed with the utmost care and precision
The double-sided structural adhesive allows you to remove the panel without complications within 8 hours after application.

Then proceed as follows:

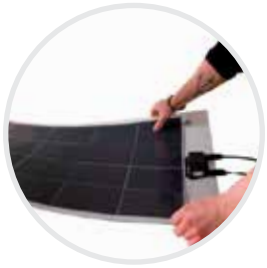
1. Clean the surface with a degreasing agent.



2. Mark the point of installation, defining the area or marking a scratch mark on the corners.



3. Lift the module and remove the protective film, discovering and exposing a sticky surface. It is recommended not to touch the exposed with hands.



4. Paste the panel on the surface. For this reason it is recommended to perform the bonding, two people: one who holds slightly raised and live out the form by holding the opposite long sides, and one that manages the installation and paste by pressing the “discovery” of the module on the support disk.
IN THIS WILL BE VERY CAREFUL NOT TO NEVER BEND OVER THE PV MODULE: CURVE, EVEN IN RESTRICTED ZONE MODULE CAN CAUSE IRREVERSIBLE DAMAGE TO PHOTOVOLTAIC CELLS. ALSO MAKE SURE THE INITIAL PHASE OF THE FORM OF BONDING.

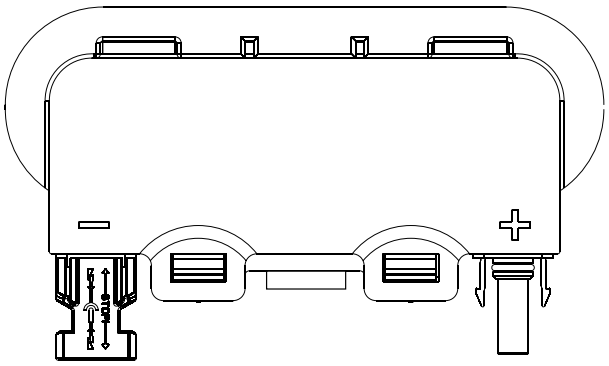
5. Now, install starting on the one hand by joining form in a progressive manner to prevent the formation of air bubbles (for any doubts consult our website).

6. After pasting, itis very important to apply pressure on the whole bonded surface. For this purpose it may be sufficient treading repeatedly the module itself, so as not to leave parts not subject to foot traffic, of course, taking care not to use too rigid and angular footwear.

ELECTRICAL CONNECTIONS OF THE PANEL

Connection system has already been applied on the panel

Connection:

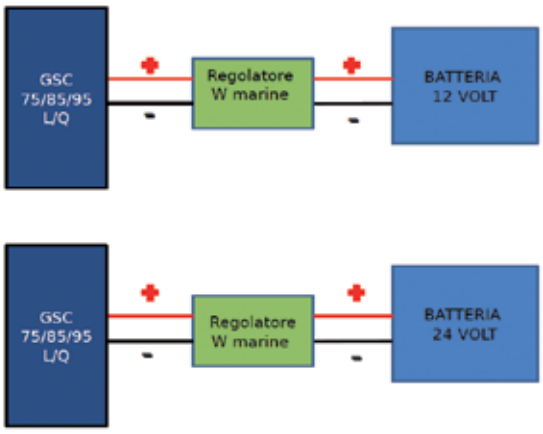


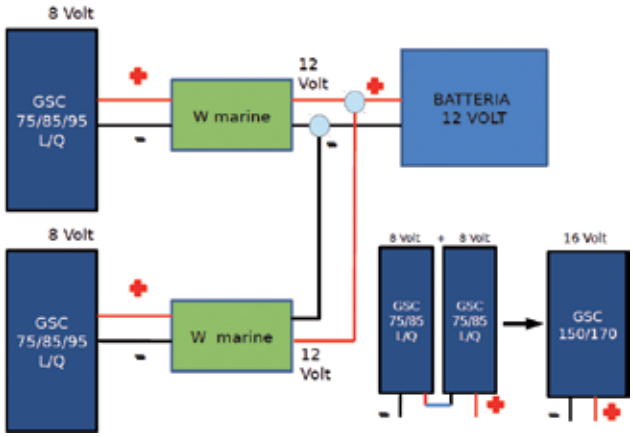
W MARINE	mppt	step-up	step-down
WRM15	mppt		step-down
WR20	PWM		

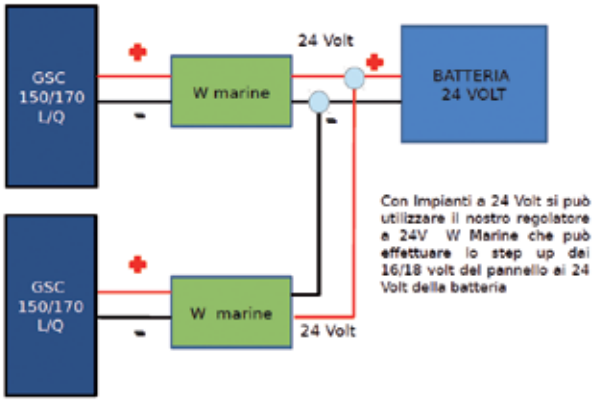
CHOICE OF COMBINATIONS SERIES / PARALLEL AND CHOICE OF REGULATORS

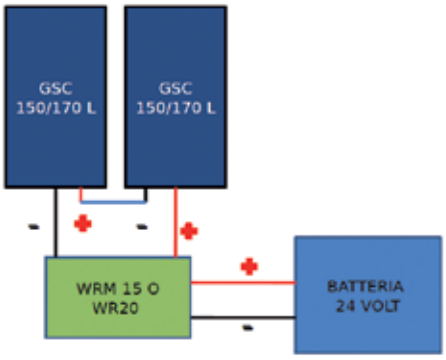
LOGIC DIAGRAM WIRING BOARDS

MONOCRYSTALLINE

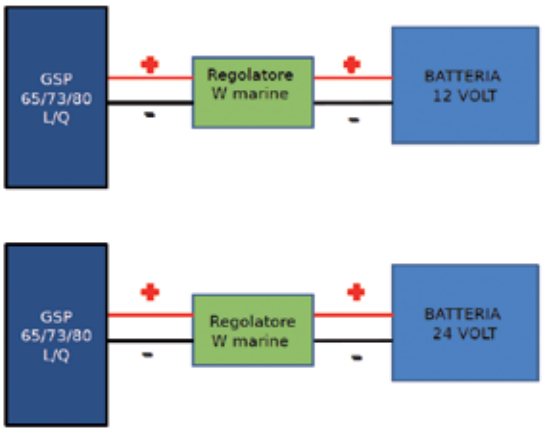


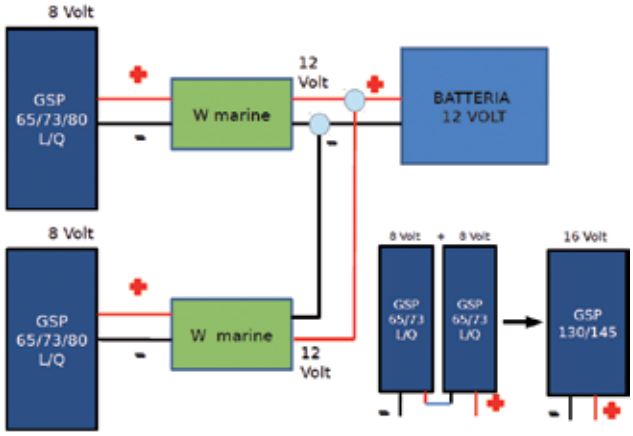


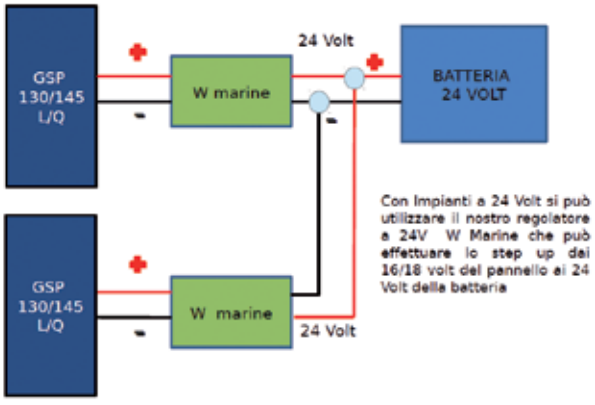


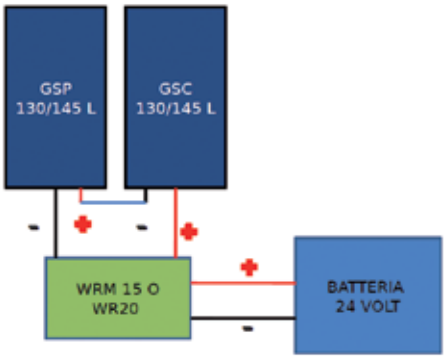


POLICRYSTALLINE









MAINTENANCE

The PV modules require very little maintenance, thanks to the absence of moving mechanical parts.
The maintenance is reduced to the following procedures:

- ✓ Clean the module when it is dirty.
- ✓ In the case of use in a marine environment often wash with fresh water in order to avoid salt encrustation and to limit damage from salt in general;
- ✓ Check the condition of the electrical connections and wiring;
- ✓ Check the electrical performance of the system.

POSSIBLE FAULTS

Due to the stringent quality controls to which PV modules are subject, cases of faults and / or defects are infrequent.
Among the reasons unrelated to the manufacturing process, we can identify the following cases: water infiltration between the module and a rigid support where it is pasted caused by improper bonding.
Lack of electrical connection module controller:

- ✓ Verify the integrity of connectors and cabling.
- ✓ The regulator is not charging the batteries
- ✓ Check the wiring with the regulator and the integrity of the battery, check the fuse of the controller (only for the WR20).

APPENDIX LEGEND

MPPT
(Max Power Point Tracking) search of the point of maximum yield. Able to optimize the performance of the panels also in case of shading.

STEP-UP
ability to elevate the voltage at battery level.

STEP-DOWN
ability to lower the voltage at battery level, allows to increase the energy efficiency of charging.

PWM
(Pulse Width Modulation) intelligent battery charging management system.

GIOCO SOLUTIONS Srl
Sales Office Turin: Via Caraglio 15, 10141 Torino (TO)
T +39 011 0438494

Sales Office Milan: Day4 Energy Europe S.r.l. - P.le Biancamano, 2
20121 Milano Italy | Tel: +39 0249539100 | Fax: +39 0249539102

Logistic Headquarter: Via Avogadro 19, 10051 Avigliana (TO)
T +39 011 19380815 | T +39 011 19822876 | F +39 011 0431563

info@giocosolutions.com
giocosolutions.com

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