

SUNSYS FJB

Installations- und bedienungsanleitung (DE)

Manuel d'installation et d'utilisation (FR)

Installation and operating manual (GB)

Manuale di installazione e uso (IT)

INDEX

1. SAFETY INSTRUCTIONS	4
1.1. GENERAL INFORMATION	4
1.2. GENERAL SAFETY RECOMMENDATIONS	4
1.3. PERSONNEL QUALIFICATION	4
2. PRODUCT OVERVIEW	5
3. INSTALLATION	7
3.1. ENVIRONMENTAL REQUIREMENTS	7
3.2. TRANSPORT – INSTRUCTIONS FOR HANDLING	7
3.3. ASSEMBLING AND DISASSEMBLING OF THE COVER	8
3.4. FIXING OF THE FIELD JUNCTION BOX	8
4. ELECTRICAL REQUIREMENTS	9
4.1. ELECTRICAL INSTALLATION, OPERATION & MAINTENANCE	9
4.2. DC SWITCH-DISCONNECTOR CABLES CONNECTIONS	9
4.3. REMOTE CONTROLLED DC SWITCH	9
4.4. DC STRINGS CONNECTION	10
4.5. INSTALLING THE FUSES	10
4.6. REFERENCES OF SPARE FUSES	11
4.7. SURGYS - SURGE PROTECTION DEVICE (SPD)	11
4.8. PERIODIC MAINTENANCE CHECKS	11
5. SCHEME	12
6. STORAGE	13
7. TECHNICAL CHARACTERISTICS	14

1. SAFETY INSTRUCTIONS

1.1. GENERAL INFORMATION

Socomec Field Junction Box is designed to make the connection of groups of strings (photovoltaic panels) to an inverter in photovoltaic applications.

Basic functions:

- Connection and combination of the photovoltaic strings
- Switching OFF and disconnection of the DC voltage of the installation
- Protection against the over-currents of all the polarities
- Fault signalling on the PV string (fuse indicator).
- Protection against atmospheric over-voltage

Optional functions

- Remote control switching OFF and disconnection.
- Canopy against solar radiations

1.2. GENERAL SAFETY RECOMMENDATIONS

- Always read this instructions manual before commissioning the equipment.



The DC voltage upstream fuse-disconnectors is never disconnected even the position of the switching products. The DC voltage level is dangerous. Any contact can cause an electrocution or an electric shock.

- The devices shall be accessible to authorized personnel only.
- Unauthorized opening of the device or improper interventions can lead to personnel severe injury, death or material damage.
- Repairs on the boards must be carried out only by the manufacturer or by personnel authorized by the manufacturer.
- Any repair works must only be carried out by qualified personnel.
- Any repair works must only be carried out using original spare parts.
- Original spare parts are available through SOCOMEC customer assistance service.
- Check protective devices regularly, following the indications in the chapter Electrical installation, operation and maintenance.
- Use only fuses of the correct dimensions. The rated current of the fuses must be calculated according to each plant specifications.
- The Socomec Field Junction Box must be used in accordance with the documentation as well as applicable directives and standards.
- The Socomec Field Junction Box must be handled with care, and protected against mechanical stresses.
- Do not bend any components.
- Do not change the isolating distances.
- Do not touch electronic components or contacts.
- The Socomec Field Junction Box contains components that are sensitive to electrostatic charges and may be damaged if handled improperly.
- Any use of damaged or spoiled components shall be considered as a non-compliance with the applicable standard.

It is forbidden to make any modification to the Field Junction Box without the prior agreement of Socomec.

1.3. PERSONNEL QUALIFICATION

Personnel must be familiar with the installation, assembly, commissioning and operation of the device and know the possible sources of danger and must have the required qualification to perform maintenance and commissioning.

This qualification must include:

- Mechanical installation of the device: Trained installation technician with basic electrical skills
- Electrical installation of the device: Trained electricians
- Commissioning of the device: Trained electricians

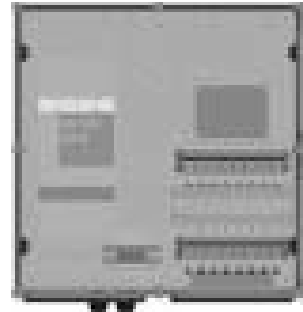
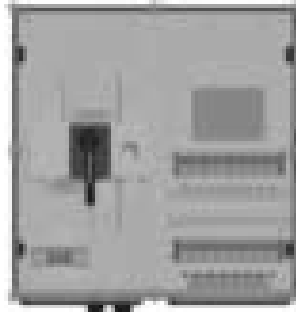
2. PRODUCT OVERVIEW

2-1 Remote controlled switching and disconnecting

MANUAL DISCONNECTION

REMOTE DISCONNECTION

8 STRINGS

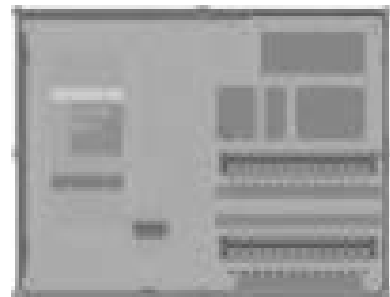
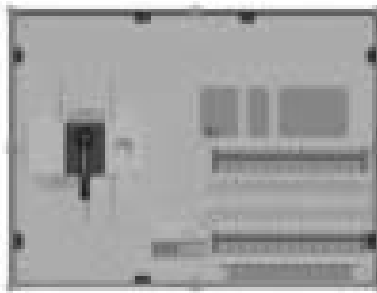


Box code
Box dimensions (H x W x D mm)

37PV0008
540 x 540 x 201

37PV1008
540 x 540 x 201

12 STRINGS

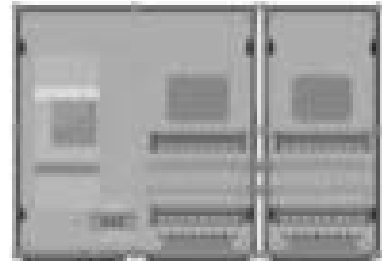
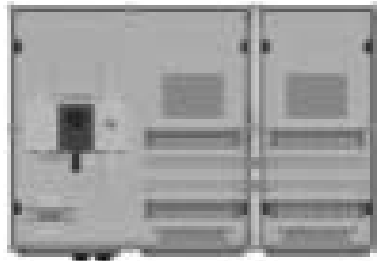


Box code
Box dimensions (H x W x D mm)

37PV0012
540 x 720 x 201

37PV1012
540 x 720 x 201

16 STRINGS

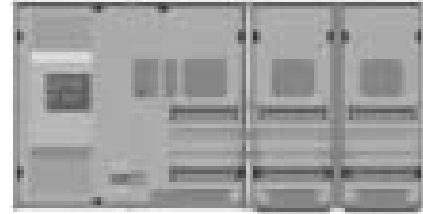
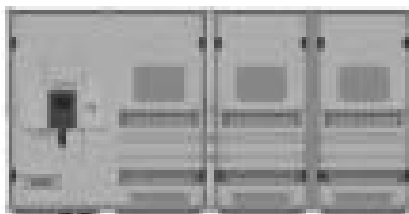


Box code
Box dimensions (H x W x D mm)

37PV0016
540 x 810 x 201

37PV1016
540 x 810 x 201

24 STRINGS



Box code
Box dimensions (H x W x D mm)

37PV0024
540 x 1080 x 201

37PV1024
540 x 1080 x 201

ENGLISH

2-2 Product identification labels

INTERNAL

Product code → **37PV0024**

Technical data →

Serial number →



07/12
CE

DE marking

COMBINER BOX 24 STRINGS/DISCONNECTOR SWITCH SIRCO 320	
DC INPUT	DC OUTPUT
Nb of strings : 24	Max output voltage : 1000V
Max voltage : 1000V DC	Max output current : 216A
Max Iscscct per string : 10A	
Max Imp per string : 9A	
DC Input auxiliary supply	24Vdc
Enclosure IP 65 (without Vent)	IEC 61439-2
Class II	

1 PC

00149810430

EXTERNAL

Product code → **37PV0024**

Description → **FJB-Solar Junction Box 8S-Man**

CE marking →

Serial number →



Symbol class

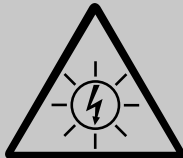
1 PC

00149810430

28/03/12

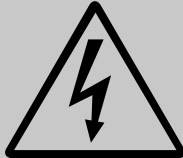
2-3 Safety labels

Label on the cover

	Attention	Attention	Attenzione	Atenção	Achtung	Atención
	Câbles courants continus sous tension	Direct current cable under voltage	Cavi in corrente continua sotto tensione	Cabo corrente continua sob tensão	Gleichstromkabel unter spannung	Cables de corriente continua bajo tensión



Label inside the box, on the polycarbonate protection screen

	Attention	Attention	Attenzione	Atenção	Achtung	Atención
	Ne pas manoeuvrer en charge.	Do not operate under voltage.	Non operare sotto tensione.	Não manipular sob tensão	Nicht unter last betätigen	No manipular en carga.



3. INSTALLATION

3.1. ENVIRONMENTAL REQUIREMENTS

The following points must be considered for installation:

- The Field Junction Box is designed for both indoor and outdoor use.
- The Field Junction Box is exclusively designed for vertical fitting.
- Ensure a good flatness of foothold of the box fixations.
- If the wall is not flat, we recommend to use rigid profiles to fix the SOCOMEC Field Junction Box and to use wedges.
- The supports on which the Field Junction Box is fitted must be of non inflammable material. There must be no inflammable material in the vicinity. If the device is fitted indoors, it is advisable to install a smoke detector.
- Ensure protection against wind, moisture, snow load and the direct exposure to sun radiation. (Special accessories may be proposed by Socomec).

3.2. TRANSPORT – INSTRUCTIONS FOR HANDLING



CAUTION!

- Do not overturn the Field Junction Box.
- The Field Junction Box can be transported only in horizontal position and in an appropriate manner.
- During transport and storage the Field Junction Box must remain in its original packaging.



WARNING!

- If visible signs of damages due to the transport are noticed on the delivered product, do not install it or put it into service. Check that the quality, the material and the type of products received are as ordered.
- For insurance reasons, visible faults, such as external damage on the packaging and/or on the product, must be notified to the sender within seven days.



CAUTION!

- The device is heavy. For transport at least two people are necessary.
- If the Field Junction Box must be transported over long distances, use adequate lifting equipment and means of transport.

3.3. ASSEMBLING AND DISASSEMBLING OF THE COVER

Unscrew the fixing screws of the cover using a slotted head screw driver 10 mm.

2 x 8 screws for the Field Junction Box 24 strings

1 x 8 and 1 x 6 screws for the Field Junction Box 16 strings

1 x 8 screws for the Field Junction Box 8 strings and 12 strings



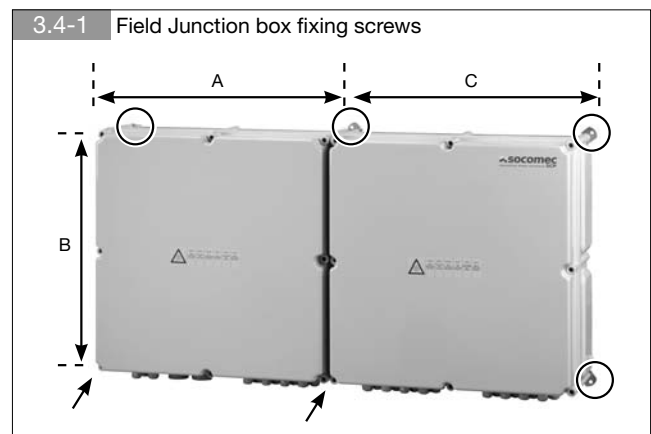
3.4. FIXING OF THE FIELD JUNCTION BOX

Recommended screw diameter: M5

Dimensions for the drilling of the Field Junction Box fixing screws

Field Junction Box model	A (mm)	B (mm)	C (mm)
8 strings (4 fixing screws)	540	540	
12 strings (4 fixing screws)	720	540	
16 strings (6 fixing screws)	540	540	270
24 strings (6 fixing screws)	540	540	540

Tightening torque of the screws for the reassembling of the cover (min/max): 3 Nm / 3,5 Nm



4. ELECTRICAL REQUIREMENTS

4.1. ELECTRICAL INSTALLATION, OPERATION & MAINTENANCE

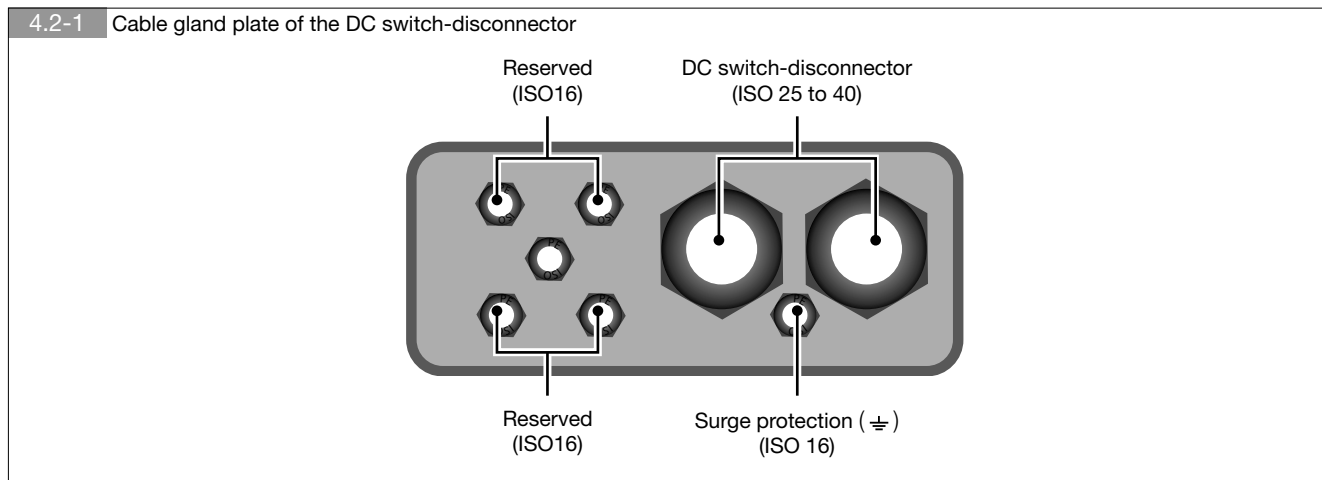


CAUTION: RISK OF ELECTRIC SHOCK

- Before starting any installation work, use personal protective equipment.
- During operation the temperature of some components may be high.
- Disconnect the DC switch-disconnector and then open all the fuse holders.
- Check the tightening torque of the fuse holder electrical connections before product installation.

4.2. DC SWITCH-DISCONNECTOR CABLES CONNECTIONS

- Switch-disconnector instructions must be respected.
 - Do not remove the safety insulating screens separation between the terminals
- A pre-break NO/NC contact is fitted in standard on the DC switch-desconnector.



No. of strings	Device rating	Cable gland (marked A)	Cable gland (Identified B-R)	Min. cable diameter (mm)	Max. cable diameter (mm)	Min. cable cross-section (mm ²)	Max. cable cross-section (mm ²)
8	160 A	ISO 25	/	13	19	35	120
12	160A	ISO 32	/	15	25	95	120
16	200A	ISO 32	/	15	25	95	120
24	320 A	ISO 40	/	21	32	120	240
All types	/	/	ISO 16	5	10	-	6

Tightening torque of the power cables connecting screws of the DC switch-disconnector:

DC switch disconnector type	Configuration (Nb of strings)	Connecting screws	Tightening torque (Nm)
With remote tripping	8 – 12 – 16	M8	14Nm
	24	M10	31Nm
With manual tripping	8 – 12 – 16 - 24	M10	24Nm

The interphase barriers of the DC switch shall be equipped during normal operation of the Field Junction Box

4.3. REMOTE CONTROLLED DC SWITCH

It is possible to insert a trip coil on the main switch so that the switch can be remote controlled. The trip coil is supplied as an option (equipped by the customer).

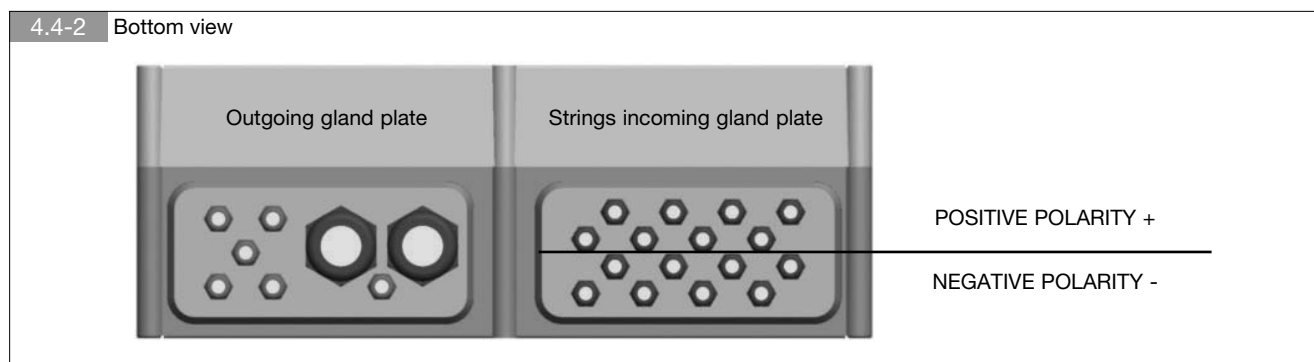
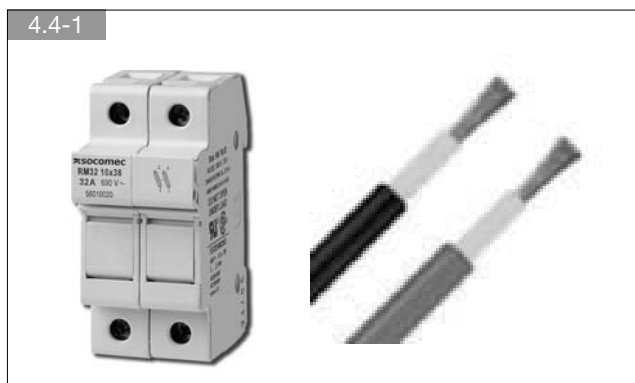
4.4. DC STRINGS CONNECTION

Type of cable: cables with double insulation for photovoltaic applications.

Cross-section Cu: 4 to 6 mm²

Cable glands: ISO 16 (max)

Tightening torque of the fuse disconnectors: 2 to 2.5 Nm



4.5. INSTALLING THE FUSES

- Use only gPV fuses certified for photovoltaic applications.
- Type de fuses: PV 10 x 38 gPV 1000V (compliance with IEC 60269-6)
- ISC STC max/string: 10 A
- PV module peak power current IMPP/string: 9 A
- The rated current of the fuses must be calculated for each plant separately (See maximum rated current ISC STC and Impp STC values per string in the Technical Characteristics chapter).
- The fuse-holder terminals where the strings cables are connected are always live even if the fuse holder is open.
- Before inserting the fuses of the strings, check the correct polarity of the inputs and check if there is no earth fault.
- Install/remove the fuses only after having disconnected the load (by opening the DC switch-disconnector) and using the appropriate personal protective equipment.



4.6. REFERENCES OF SPARE FUSES

Minimum quantity to order: 10 pieces

Fuse rating	Reference
2A	60DC0002
4 A	60DC0004
6 A	60DC0006
8 A	60DC0008
10 A	60DC0010
12 A	60DC0012
16 A	60DC0016

4.7. SURGYS - SURGE PROTECTION DEVICE (SPD)

Installation

Cable cross-section: 6 mm² to 25 mm².

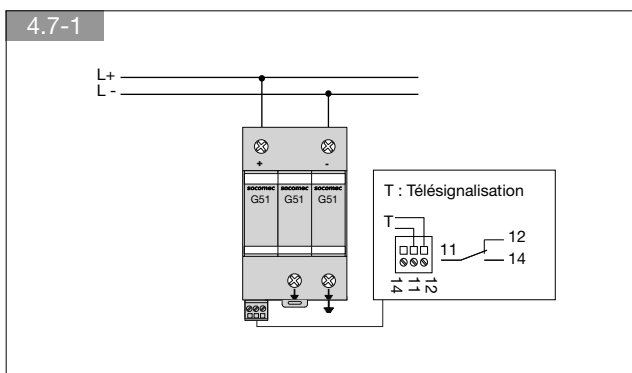
Maximum cable length: 0.5 m

Respect the rules of the class 2: the ground connecting cable of the SPD device must not be yellow/green coloured.

PE cable tightening torque: 2.2 Nm

Maintenance

- Check the end of service life indicator of the Surgys.
- Reference of Surgys m-G51-1000PV with remote signal, 2 poles: 49822521
- Reference of spare plug-in module m-G51-1000PV: 49822529



4.8. PERIODIC MAINTENANCE CHECKS

Checklist

- Cable status.
- Box status.
- Connections status.
- Check tightening torques.
- Fuses status.
- DC switch-disconnector status.
- DC switch-disconnector remote trip operation.
- Surgys surge protection device Status (end of life indicators).

Periodicity: once a year minimum.

4.9. STORAGE

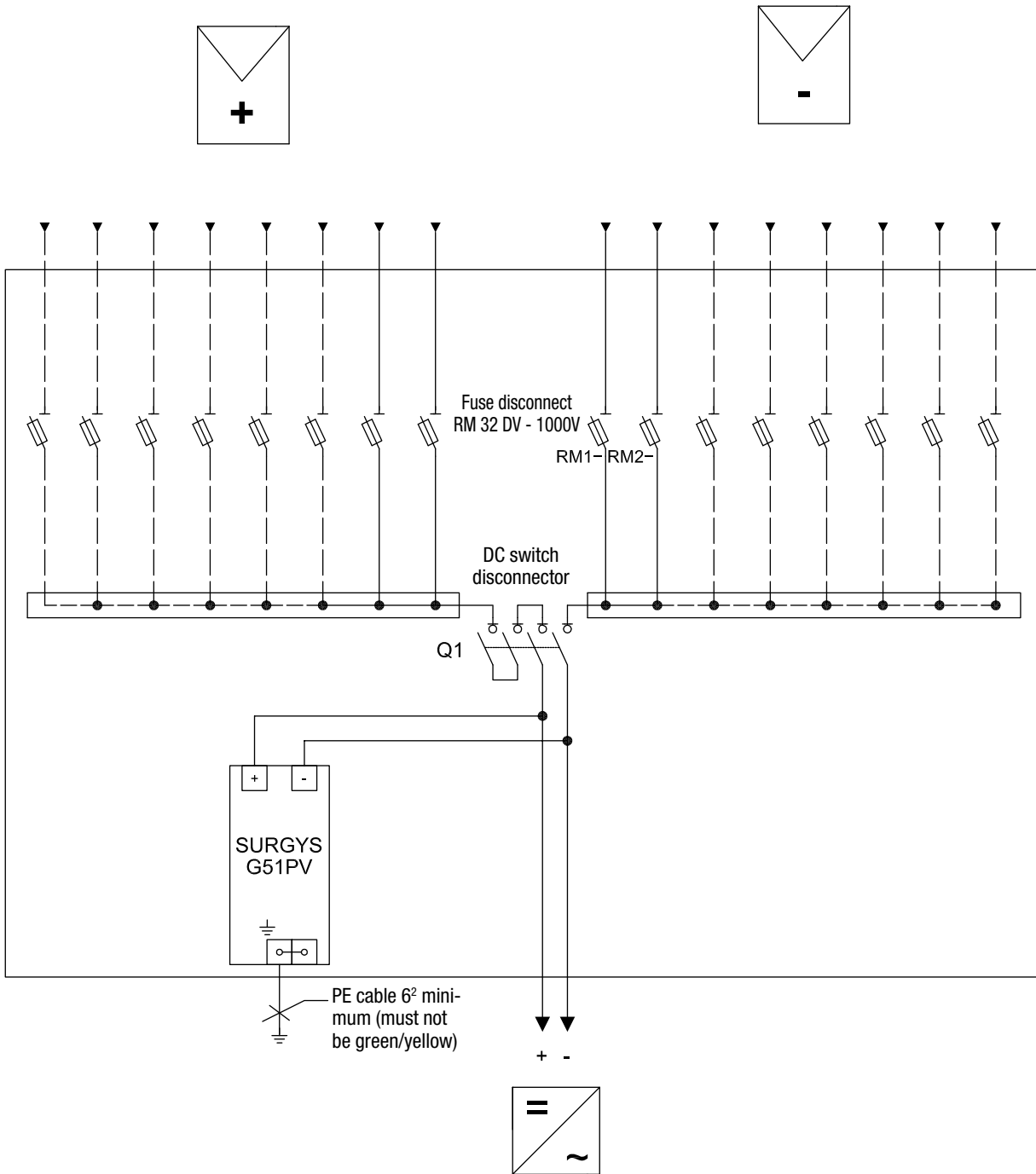
The Field Junction Box must be stored appropriately.

- During storage the Field Junction Box must remain in its original packaging.
- The Field Junction Box must be stored in environments free from damp, protected against dust and condensation and exposed to small variations in temperature.
- Observe the climate conditions in conformity with standard EN 50178.
- Ambient temperature for transport and storage: from -25 °C to +60 °C

5. SCHEME

5-1 SOCOMEC Field Junction Box without monitoring

Number of strings	8	12	16	24
Load break Q1	160A	200A	200A	320A
Cross-section	35 ²	50 ²	50 ²	2x50 ²



6. TECHNICAL CHARACTERISTICS

Configurations ⁽¹⁾	8 strings	12 strings	16 strings	24 strings
Environmental conditions				
Ambient temperature operating range	- 20 to +40 °C without derating 40 to 60 °C see derated values hereunder*			
Storage temperature	- 20 to +70 °C			
Relative humidity/Altitude	95% without condensation @ 40 °C / 2000 m			
Electrical characteristics				
Maximum open circuit voltage (Uoc MAX)	1000 VDC			
Rated impulse withstand voltage	8 kV			
Maximum rated current per string at 40 °C	Impp STC / Isc STC (A)			
Connection for rating 2 A	1,30/1,40	1,30/1,40	1,30/1,40	1,30/1,40
Connection for rating 4 A	2,40/2,66	2,40/2,66	2,40/2,66	2,40/2,66
Connection for rating 6 A	3,60/4,00	3,60/4,00	3,60/4,00	3,60/4,20
Connection for rating 8 A	4,60/5,10	4,60/5,10	4,60/5,10	4,90/5,40
Connection for rating 10 A	5,70/6,30	5,70/6,30	5,70/6,30	6,20/6,80
Connection for rating 12 A	6,90/7,60	6,90/7,60	6,90/7,60	7,40/8,10
Connection for rating 16 A	9,10/10,00	9,10/10,00	9,10/10,00	9,10/10,00
Maximum rated current per string at 60 °C	Impp STC / Isc STC (A)			
Connection for rating 2 A	1,30/1,40	1,30/1,40	1,30/1,40	1,30/1,40
Connection for rating 4 A	2,40/2,66	2,40/2,66	2,40/2,66	2,40/2,66
Connection for rating 6 A	3,50/3,85	3,60/4,00	3,50/3,85	3,80/4,20
Connection for rating 8 A	4,50/5,00	4,60/5,10	4,50/5,00	4,90/5,40
Connection for rating 10 A	5,70/6,25	5,70/6,30	5,70/6,25	6,20/6,80
Connection for rating 12 A	6,80/7,50	6,90/7,60	6,80/7,50	7,40/8,10
Connection for rating 16 A	7,50/8,20	9,10/10,00	7,50/8,20	7,70/8,50
Protection class	Class 2 <input type="checkbox"/>			
Mechanical characteristics				
Degree of protection	IP65			
Mechanical impact protection	IK09			
Weight (kg)	17	20	26	38
Dimensions (HxWxD mm)	540 x 540 x 201	540 x 720 x 201	540 x 810 x 201	540 x 1080 x 201
Standards				
Specification and testing of low voltage electrical assemblies				
Power switchgear and controlgear assemblies	IEC 61439-2 (Issue 2; 2011)			
Photovoltaic installation guide	UTE C 15-712-1			
European conformity	Low voltage European Directive n°2006/95/CE - European Directive EMC n°2004/108/CE			

HEAD OFFICE

SOCOMEK GROUP

S.A. SOCOMEK capital 10 816 800€
R.C.S. Strasbourg B 548 500 149
B.P. 60010 - 1, rue de Westhouse
F-67235 Benfeld Cedex - FRANCE
Tel. +33 3 88 57 41 41
Fax +33 3 88 74 08 00
info.scp.isd@socomec.com

www.socomec.com

YOUR DISTRIBUTOR



IOMSUNIFXX01-GB 00 01.2014

