

Certificate of Compliance

Certificate Number: MCS IK0197

Issue: 10

Renusol Europe GmbH

Piccoloministr. 2

51063 Cologne

NRW

Germany

having complied with the following MCS product certification scheme requirements:

MCS 010 – Generic Factory Production Control and Product Quality Requirements – Issue 2.0

and

MCS 012 – The Solar Mounting Standard

(The issue number is stated in the heading of the table(s) in the appendix)

is authorised to use the BRE Global Certification Mark and the MCS Certification Mark in association with the products listed in the appendix.

The validity of this certificate with appendix is maintained in accordance with MCS scheme requirements which include annual factory production control surveillance assessment.

Please see Appendix for product details



Laura Critien

20 August 2024

23 June 2014

Signed for BRE Global Limited

Team Manager

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Appendix to Certificate No: MCS IK0197 Issue: 10

Renusol Europe GmbH

Products

MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
InterSole SE / ISSE ⁱⁱ (when installed with CentroSolar S xxxP60 Professional modules, xxx = 200-265W)	Roof Installation Kit (Roof Integrated)	MCS IK0197/01
<i>Technical information for InterSole SE using Anker roof fixing:</i> Roof substrate: Timber battens ⁱ Minimum roof Pitch: 20° Maximum design wind uplift: 2954.5Pa (when used on 2 modules with a total of 6 fixings) Value of partial safety factor: 1.1 Fire safety performance: EXT.S.AA		
Certificated system components: InterSole anchor (400015) InterSole plate (500007) Mid clamp (400019) End clamp (410000) Flashing bottom (700002) Flashing side (700001) Flashing top (700003) Universal middle clamp (420082) Universal middle clamp (blk) (420082-BE) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) RS1 – ultimate clamp (420080) RS1 – ultimate clamp (blk) (420080-BE) Mounting rail (400018, 460018, 400024)		Other system componentsⁱⁱⁱ: P-Clip (Potential equalization) (900268) Wood screw Mounting clip Mounting bracket Sealing strip Sealing tape Glue

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MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
MetaSole, MetaSole+ / MS+	Roof Installation Kit (Above Roof)	MCS IK0197/02
<i>Technical Information for MetaSole using Klemfuß roof fixing:</i> Roof substrate: Trapezoidal sheet on 80 x 100 mm timber rafters ⁱ Minimum Roof pitch: 10° Maximum design wind uplift: 1994.4 Pa (when used on 2 modules with a total of 6 fixings) Value of partial safety factor: 1.25		
Certificated system components: Clamp foot (400402) Clamp foot portrait (420420, 420421) (Design uplift resistance 2600 Pa) Mid clamp (400019) End clamp (410000) Screw JT3-X2 Screw SDK2-S-377 Screw RP-TS-LK 6,0x25 Universal middle clamp (420082) Universal middle clamp (blk) (420082-BE) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) RS1 – ultimate clamp (420080) RS1 – ultimate clamp (blk) (420080-BE) Adapter corrugated sheet (420401) MS+ H clamp foot (420423)		Other system componentsⁱⁱ: P-Clip (Potential equalization) (900268)

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MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
VarioSole SE, VarioSole+ / VS+ (with Aluminium Roof Hooks)	Roof Installation Kit (Above Roof)	MCS IK0197/03
<i>Technical information for VarioSole SE using Dachhaken Aluminium roof hooks:</i> Roof substrate: Timber rafters Minimum roof pitch: 20° Maximum design wind uplift: 3097.7 Pa (when used on 2 modules with a total of 6 fixings) Value of partial safety factor: 1.1		
Certificated system components: Mid clamp (400019) End clamp (410000) Rail connector (400532) Cross rail connector (420083) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) Roof hook adjustable (420161) Bracket (IFP M8/M10, set(1pc.)) (420024) Mounting rail (400502, 400505, 400506, 400509 + black variants) (400527, 400528, 500529) Mounting rail 41mm (400511, 400512, 400513, 400519 + black) (400523, 400524, 400525) Universal middle clamp (420082) Universal middle clamp (blk) (420082-BE) RS1 – ultimate clamp (420080) RS1 – ultimate clamp (blk) (420080-BE)		Other system componentsⁱⁱⁱ: P-Clip (Potential equalization) (900268) Mushroom head screw

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MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
VarioSole SE, VarioSole+ / VS+ (with Hanger Bolts)	Roof Installation Kit (Above Roof)	MCS IK0197/04
<i>Technical information for VarioSole SE using Solarbefestiger hanger bolts on metal sheets:</i> Roof substrate: Metal sheet on timber rafters ⁱ Minimum roof pitch: 10° Maximum design wind uplift: 3097.7 Pa (when used on 2 modules with a total of 6 fixings) Value of partial safety factor: 1.1		
Certificated system components: Solar fastener bracket (900181 - 192) Hanger bolt (R860006, -7, -17, R920002, -008, -136, -137, -159) Mid clamp (400019) End clamp (410000) Bracket (IFP M8/M10, set(1pc.)) (420024) Rail connector (400532) Cross rail connector (420083) Mounting rail (400502, 400505, 400506, 400509 + black variants) (400527, 400528, 400529) Mounting rail 41mm (400511, 400512, 400513, 400519 + black) (400523, 400524, 400525) Universal middle clamp (420082) Universal middle clamp (blk) (420082-BE) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) RS1 – ultimate clamp (420080) RS1 – ultimate clamp (blk) (420080-BE)		Other system componentsⁱⁱ: P-Clip (Potential equalization) (900268) EPDM washer Washer trapezoidal metal sheet Washer corrugated metal sheet

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MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
VarioSole SE, VarioSole+ / VS+ (with Steel Roof Hooks)	Roof Installation Kit (Above Roof)	MCS IK0197/05
<i>Technical information for VarioSole SE using Dachhaken Biber & Schiefer roof hooks (without sealing kitⁱⁱ):</i>		
Roof substrate:	Timber rafters/	
Minimum roof pitch:	20°	
Maximum design wind uplift:	2000 Pa (when used on 2 modules with a total of 6 fixings)	
Value of partial safety factor:	1.0	
Certificated system components: Roof hook UK pantile (420180) Roof hook plain tiles, slates (420181) Roof hook UK Flexible (420182) Roof hook UK Flexible 90° (420183) Roof hook UK Plain tiles/slates (420181) Roof hook UK Plain Tile HL (420184) Roof hook stainless steel (420150) Roof hook plain tiles (420153) Roof hook slate tiles (420155) Roof hook ECO Basic (420165) Mid clamp (400019) End clamp (410000) Bracket (IFP M8/M10, set(1pc.)) (420024) Mounting rail (400502, 400505, 400506, 400509 + black variants) (400527, 400528, 400529) Mounting rail 41mm (400511, 400512, 400513, 400519 + black) (400523, 400524, 400525) Universal middle clamp (420082), ((blk)420082-BE) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) RS1 – ultimate clamp (420080), ((blk)420080-BE) Cross rail connector (42008)		Other system componentsⁱⁱⁱ: P-Clip (Potential equalization) (900268) Rail connector Mushroom head screw

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MCS 012 – The Solar Mounting Standard – Issue 2.4

Model	Description	Reference No.
VarioSole+ / VS+ (with Standing Seam Clamps)	Roof Installation Kit (Above Roof)	MCS IK0197/06
<i>Technical information for VarioSole+ using S5 Standing Seam Clamps.</i> Roofsubstrate: Maximum design wind uplift: Value of partial safety factor:	Standing seam metal sheet (on 100x40mm battens and 80x100mm rafters) 3181.8 Pa (when used on 2 modules with a total of 6 fixings) 1.1	
Certificated system components: Hexagon bolt (900025) M8 Nut (900001) Mounting rail (400527, 400528, 400529) Mounting rail 41mm (40051X +Black Variants) (400523, 400524, 400525) Mounting rail 50mm (40050X +Black Variants) Universal middle clamp (420082) Universal middle clamp (blk) (420082-BE) Universal end clamp (420081) Universal end clamp (blk) (420081-BE) RS1 – ultimate clamp (420080) RS1 – ultimate clamp (blk) (420080-BE) M10 Bracket (420014) Bracket (IFP M8/M10, set(1pc.)) (420024) S5-E-Mini (400254) S5-Z-Mini (400255) S5-S-Mini (400259) S5-R-465-Mini (400563) S5-R-465 (400252) Round seam clamp for Kalzip and similar (400362) Kalzip clamp for standing seam Typ FS (400256)	Other system componentsⁱⁱⁱ: <i>P-Clip (Potential equalization) (900268)</i>	

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MCS 012 – The Solar Mounting Standard – Issue 3.0

MCS Product Certification Number	MCS IK0197/07
Solar mounting system name	VarioSole, VarioSole+ / VS+ (with RH1 Roof Hook)
Solar mounting system reference number	REN_RH1_01
Installation, Use and Maintenance Instructions ^{Note 1}	MCS IUMI VS+ RH1 v01 version 1.6

Certificated system compatibility details:

Roof type	Pitched	Roof pitch range	22.5°–65°	Installation type	Above Roof
Panel type	Solar PV		Panel orientation	Portrait	
Roof coverings ^{Note 2}	Single lap interlocking roman tile				
Roof substructure	Wood rafter ≥ 65.5*100 mm				

Certificated system components and part numbers:

Roof Hook RH1 (R420171)	VS+ Mounting rail 50x37 2400 (R400549)
Wood screw pan head 6,0x80 SIT 30 (R900318)	VS+ Mounting rail 50x37 3600 (R400570)
RS1 (R420080) [module clamp]	VS+ Mounting rail 50x37 4800 (R400571)
RS1 (black) (R420080-BE) [module clamp]	VS+ Mounting rail 50x37 (blk) 2400 (R400549-B)
End clamp+ (R420081)	VS+ Mounting rail 50x37 (blk) 3600 (R400570-B)
End clamp+ (black) (R420081-BE)	VS+ Mounting rail 50x37 (blk) 4800 (R400571-B)
Middle clamp+ (R420082)	VS+ Mounting rail 60x38 3300 (R400535)
Middle clamp+ (black) (R420082-BE)	VS+ Mounting rail 60x38 3600 (R400536)
VS+ Mounting rail 41x35 2400 (R400534)	VS+ Mounting rail 60x38 4800 (R400573)
VS+ Mounting rail 41x35 3300 (R400524)	VS+ Mounting rail 60x38 (blk) 3300 (R400535-B)
VS+ Mounting rail 41x35 3600 (R400572)	

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Solar Mounting System Performance Information for **MCS IK0197/07**

Resistance to Wind Uplift:

Minimum dimensions of timber roof substructure	65.5*100 mm
Test set-up ^{Note 3}	2 solar PV modules (2093*1134*30 mm) mounted in portrait using 4 end clamps (R420080, R420081), 2 middle clamps (R420080, R420082), 2 rails (R400534), and 7 hooks (R420171) each attached with 3 x 6*80 mm wood screws (R900318) on to 60*195 mm ungraded timber with no roof covering
Failure mode	Serviceability Limit State (No ultimate failure but the system is no longer fit for purpose)
Applicable partial safety factor	1.0
Maximum design wind uplift resistance ^{Note 4}	1174 Pa

Weathertightness:

Roof covering and lap* (*discontinuous roof coverings)	Single lap interlocking roman tile
Headlap (double-lap discontinuous roof coverings)	n/a
Maximum unprotected gap in discontinuous roof covering without system installed (± 1 mm)	Not known
Maximum unprotected gap in discontinuous roof covering with system installed (± 1 mm)	Not known

Test	Test Pitch	Test Parameter	Roof covering only	With system installed
B	n/a	Applied suction (kPa) at leakage rate of 10g/m ² /5min	n/a	n/a
D	22.5°	Leakage observed after 2 min (g/m ²)	0 g/m ²	0 g/m ²

Snow loading:

Maximum characteristic snow load resistance ^{Note 5}	Test not applicable
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Fire Performance:

Fire classification and standard ^{Note 6}	Test not applicable
Fire classification achieved with ^{Note 7}	Test not applicable

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ⁱ Rafter and batten size should be adequate to resist applied wind load and comply with current building regulations of the country in which installed.

ⁱⁱ Certificated to MCS 012 only when used **without** plastic sealing surround.

ⁱⁱⁱ Other system components' are either not subject to the testing requirements of MCS 012 and therefore not certificated, or they do not carry identification numbers. They are listed in this certificate solely to indicate the certificated system(s) that they are compatible with.

Notes:

Note 1 – Certification is valid only when the system is installed in accordance with the 'Installation, Use and Maintenance Instructions' stated in this certificate.

Note 2 – The certificated compatible roof coverings might be generic names for roof covering types. Certificated mounting systems might not be suitable for installation on all variations of certificated compatible roof coverings. Before commencing installation, installers must assess whether the certificated mounting system is suitable for installation on the specific variation of certificated compatible roof covering identified at the installation site and can be installed in strict accordance with the 'Installation Use and Maintenance Instructions' stated in this certificate.

Note 3 – The 'Maximum design wind uplift resistance' stated in this certificate was achieved when the system was installed on the test rig in accordance with the 'Installation, Use and Maintenance Instructions' stated in this certificate and as described in the 'Test set-up'.

Note 4 – The 'Maximum design wind uplift resistance' has been calculated by dividing the characteristic wind uplift resistance by the applicable partial safety factor.

Note 5 – The 'Maximum characteristic snow load resistance' is a characteristic resistance and not a design resistance as a partial safety factor has not been applied.

Note 6 – If the solar mounting system installation method specified in the 'Installation Use and Maintenance Instructions' does not alter the existing roof covering in any way, then fire performance is not assessed and 'Test not applicable' will be stated in the certificate.

Note 7 – The fire classification only applies when the solar mounting system is installed in combination with the solar panel(s) listed in this certificate.

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