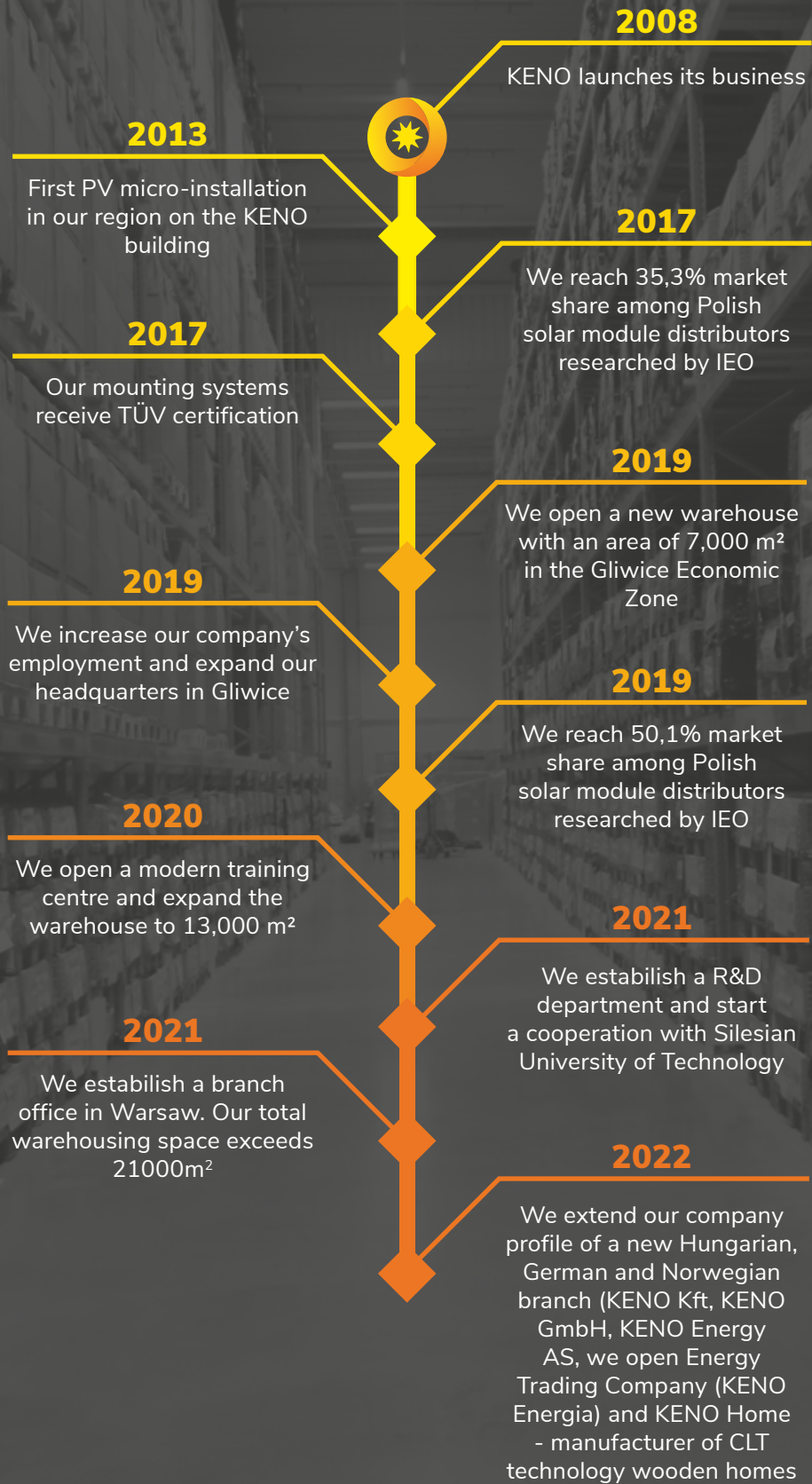


MOUNTING SYSTEMS
FOR PV



WORK WITH THE BEST

KENO has been active in the renewable energy industry since the beginning, specialising in provision of comprehensive, reliable solutions for professionals. Over the years, we have expanded our range to include photovoltaic modules and inverters from leading manufacturers. We are also a manufacturer of TÜV-certified mounting systems and distribution boards which can be customised to individual customer projects. Now, our rich portfolio as a distributor and manufacturer has been expanded even further to include product training and training for future installers, from theory to practice, with training sessions held at our headquarters by photovoltaic industry experts.

As a result, we have been a leader in photovoltaic module sales since 2017. Our accomplishments are confirmed by certificates issued by the Institute for Renewable Energy.

We have earned the trust of installers by providing high quality service. All our Customers have a dedicated customer service consultant at their disposal, and our extensive support and logistics departments ensure efficient order processing. Our technical department experts will answer all your questions concerning installation, and our designers will prepare visualisations and circuit diagrams for your perusal.

At KENO we focus on professionalism, commitment and individual approach to each of our customers. Thanks to that we can provide both the products they need and an expert after-sales service.



1. KENO

2. NORMS

3. PRODUCTS

4. MOUNTING SYSTEMS



B2B PLATFORM

We have created a B2B platform for installers, which allows customers to quickly and efficiently select and price a photovoltaic kit, and, thanks to frequent updates, gives them access to the latest products and discounts.

Our system makes it possible to:

- ⊕ Automatically select installation components
- ⊕ Place orders and track their processing, and have constant access to invoices
- ⊕ Generate offers for installers and quotations for end customers
- ⊕ Download up-to-date data sheets, warranties and certificates
- ⊕ Access current stock levels and promotions
- ⊕ Access information about upcoming training sessions organised by KENO

WWW.WYCENA.KENO-ENERGY.COM

We also provide tutorial videos to help you learn the features of our platform.



SURGE PROTECTION

We are a manufacturer of high-quality distribution boards, which use components from leading brands, such as Phoenix, Dehn, and Noark.

- ➔ Manufactured in accordance with EN 60670-1
- ➔ IP 65 and IP 66 rating for indoor and outdoor use
- ➔ Class II protection
- ➔ Suitable for up to 1000 V and 1500 V on the DC side and up to 400 V on the AC side
- ➔ UV- and weather-resistant
- ➔ Aesthetic enclosure with transparent door



We offer a large variety of standard and customised distribution board models, divided into three groups: AC, DC and the most popular AC/DC.

We are also manufacturing **Automatic Backup Systems**, which cooperate with hybrid inverter, enables emergency power supply to the consumers in the event of power grid failure. This allows us to provide our customers with an offer that is perfectly tailored to their requirements.

Complete offer of distribution boards with configuration options is available on our B2B platform.

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LARGE SCALE PROJECTS SUPPORT

We offer mounting systems dedicated for large scale projects, customized to the requirements of the submitted project and dedicated for a chosen solar module type. This allows for the BOS cost optimization, quickening and increased convenience of the assembly time.

Thanks to Magnelis® coating and 3-mm thick double supports, we enhanced durability and steadiness of the mounting system, ensuring reliability over the years.

ADVANTAGES OF KENO MOUNTING SYSTEMS

- + 10-year warranty in standard, with optional warranty extension up to 25 years
- + Mounting system customization by fitting to chosen solar module type
- + Compatible with bifacial type modules
- + Regulated tilt angle
- + Enables installation in 4 horizontal rows
- + Quick and convenient installation

MOUNTING SYSTEMS ARE MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

PN-EN 1090-1+A1:2012	Execution of steel structures and aluminium structures	Part 1: Requirements for conformity assessment of structural components
PN-EN 1090-3:2008	Execution of steel structures and aluminium structures	Part 3: Technical requirements for aluminium structures
PN-EN 1090-2+A1:2012	Execution of steel structures and aluminium structures	Part 2: Technical requirements for steel structures
EN ISO 4063	Welding process	
EN ISO 3834-4	Quality requirements for welding	
PN-EN ISO 3506-1	Mechanical properties of corrosion-resistant steel bolts	

THE FOLLOWING STANDARDS WERE USED FOR CALCULATIONS:

PN-EN 1991-1-3:2005/ Na:2010-Eurokod 1	Actions on structures	Part 1-3: General actions – Snow loads
PN-EN 1991-1-4:2008-Eurokod 1	Actions on structures	General actions – Wind actions
PN-EN 1999-1-1:2011-Eurokod 9	Design of aluminum structures	Part 1-1: General rules
PN-EN 1990:2004-Eurokod	Basic design rules of structures	
PN-EN 1993-1-1-Eurokod 3	Design of steel structures	Część 1-1: General rules and rules for buildings
PN-EN 1993-1-8-Eurokod 3	Design of steel structures	Część 1-8: Design of joints [Authority: The European Union Per Regulation 305/2011, Directive 98/34/EC, Directive 2004/18/EC]

Our company's mounting systems have been positively verified by TÜV Thüringen and in 2017 obtained a number of certificates confirming compliance with quality standards. Our customers can be sure that our solutions are safe and have been manufactured with utmost care.



K-01-2220... 6290

Aluminium profile 2220/3540/4400/6290



Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	2220 / 3540 / 4400 / 6290

Additional information

K-01-2220-CZ

Black aluminium profile 2220



Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	2220

Additional information Black powder coating.

K-25-4400

Reinforced aluminium profile 4400 with channels for T-bolts



Material	Aluminium
Height [mm]	80
Width [mm]	40
Lenght [mm]	4400

Additional information Reinforced profile used mainly in free-standing systems. Twice the height of the standard mounting profile. The profile has additional side channels for hex cap bolts. Compatible with K-02, K-04, K-28.

K-26-1180... 5276

Aluminium angle bar 1180/3560/5276



Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	1180 / 3560 / 5276

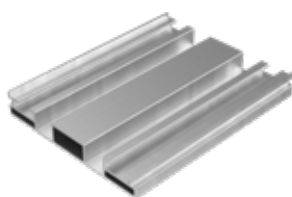
Additional information The profile of length 1180 has got an additional $\Phi 11$ mm side channels for hex cap bolts dedicated for ballast mounting system

K-36-3540**Deep-channel aluminium profile 3540**

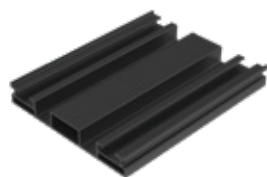
Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	3540

Additional information**K-45-1200... 2400****Aluminium rail for ballasted installation 1200/2400**

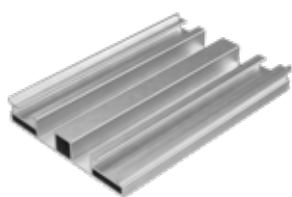
Material	Aluminium
Height [mm]	38
Width [mm]	132
Lenght [mm]	1200 / 2400

Additional information**K-66-1****Trapezoidal angular rail, rear**

Material	Aluminium
Height [mm]	20
Width [mm]	130
Lenght [mm]	330 / 470

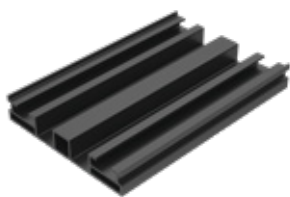
Additional information**K-66-1-CZ****Trapezoidal angular rail, rear, black**

Material	Aluminium
Height [mm]	20
Width [mm]	130
Lenght [mm]	330 / 470

Additional information Black powder coating.**K-66-2****Trapezoidal angular rail, front**

Material	Aluminium
Height [mm]	20
Width [mm]	110
Lenght [mm]	330 / 470

Additional information

K-66-2-CZ**Trapezoidal angular rail, front, black**

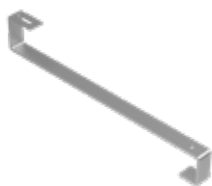
Material	Aluminium
Height [mm]	20
Width [mm]	110
Lenght [mm]	330
Additional information	Black powder coating.

K-70-2220... 3540**Aluminium profile with double channels for T-bolts 2220/3540**

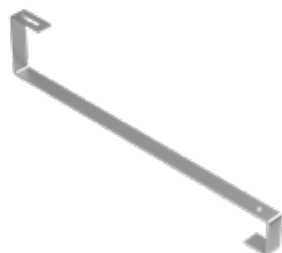
Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	2220 / 3540
Additional information	

BRACKETS □**K-08-R****L-type roof hook with single adjustment**

Material	Stainless steel
Height [mm]	70-94 (regulated)
Width [mm]	30
Lenght [mm]	240
Hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-09-F**S-type roof hook**

Material	Stainless steel
Height [mm]	133
Width [mm]	30
Lenght [mm]	466
Hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-09-FW**S-type roof hook – elongated**

Material	Stainless steel
Height [mm]	163
Width [mm]	25
Lenght [mm]	501
Hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm. The bracket is designed for elongated roof tiles.

K-09-FR**S-type roof hook with single adjustment**

Material	Stainless steel
Height [mm]	127-150 (regulated)
Width [mm]	30
Lenght [mm]	471
Hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-10**Non-adjustable roof hook**

Material	Stainless steel
Height [mm]	130
Width [mm]	150
Lenght [mm]	165
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-10+3**Non-adjustable roof hook raised by 3 cm**

Material	Stainless steel
Height [mm]	157
Width [mm]	150
Lenght [mm]	165
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-12**Roof hook with double adjustment**

Material	Stainless steel
Height [mm]	135-175 (regulated)
Width [mm]	140
Lenght [mm]	204
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-12+3**Roof hook with double adjustment, raised by 3 cm**

Material	Stainless steel
Height [mm]	165-185 (regulated)
Width [mm]	140
Lenght [mm]	180
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-12-Long**Roof hook with double adjustment – Long**

Material	Stainless steel
Height [mm]	135-180
Width [mm]	140
Lenght [mm]	230
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-12-Strong**Roof hook with double adjustment – Strong 8 mm**

Material	Stainless steel
Height [mm]	135-185
Width [mm]	140
Lenght [mm]	230
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-13**Adjustable roof hook (for trapezoidal sheets)**

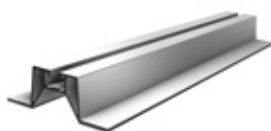
Material	Stainless steel
Height [mm]	121
Width [mm]	45
Lenght [mm]	106
Hole diameter [mm]	7
Additional information	"Bean" type adjustment hole 40x11 mm. Universal bracket for trapezoidal sheets of various sizes.

K-14**Trapezoidal short rail high, 330/470 mm**

Material	Aluminium + EPDM
Height [mm]	60
Width [mm]	95
Lenght [mm]	330 / 470
Additional information	Mounting with sheet metal screws. Spacer material (EPDM).

K-14-330-CZ**Trapezoidal short rail high, 330 mm**

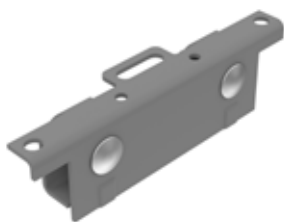
Material	Aluminium + EPDM
Height [mm]	60
Width [mm]	95
Lenght [mm]	330
Additional information	Mounting with sheet metal screws. Spacer material (EPDM). Black powder coating.

K-14N**Trapezoidal short rail low, 330/470 mm**

Material	Aluminium + EPDM
Height [mm]	31
Width [mm]	95
Lenght [mm]	330 / 470
Additional information	Mounting with sheet metal screws. Spacer material (EPDM).

K-15-R**Adjustable roof hook (plain roof tile)**

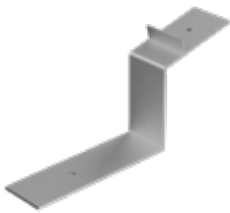
Material	Stainless steel
Height [mm]	140-160 (regulated)
Width [mm]	30
Lenght [mm]	315
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-24-C**Adjustable roof hook – for sheet metal seams**

Material	Stainless steel
Height [mm]	58
Width [mm]	50
Lenght [mm]	210
Additional information	Adjustment hole 40x11 mm. Comes with two M10 bolts and two M10 nuts.

K-24-Z**Adjustable roof hook for sheet metal seams with two folds**

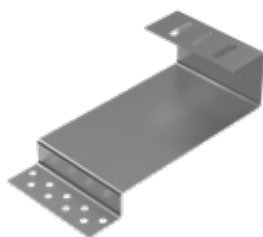
Material	Stainless steel
Height [mm]	40
Width [mm]	40
Length [mm]	100
Additional information	Adjustment hole 40x11 mm. Comes with two M8x25 hex bolts and two M8 nuts.

K-34-1**Edge bracket low**

Material	Aluminium + EPDM
Height [mm]	187
Width [mm]	80
Length [mm]	425
Hole diameter [mm]	Hexagon socket cap screw with serration M8
Additional information	Mounting hole in base 11 mm. Threaded mounting hole in the top for use with element K-18. Tilt angle 15°. A stop to facilitate module positioning. Spacer material.

K-34-4**Edge bracket high**

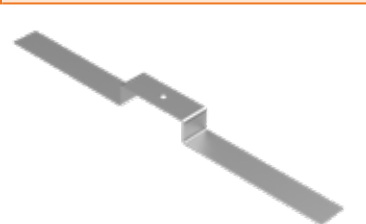
Material	Aluminium + EPDM
Height [mm]	395
Width [mm]	80
Length [mm]	425
Additional information	Mounting hole in base 11 mm. Threaded mounting hole in the top for use with element K-18. Tilt angle 15°. Spacer material.

K-44**Stainless steel roof hook (plain roof tile)**

Material	Stainless steel
Height [mm]	115
Width [mm]	140
Length [mm]	290
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-44-W**Elongated stainless steel roof hook (plain roof tile)**

Material	Stainless steel
Height [mm]	115
Width [mm]	140
Lenght [mm]	410
Rafter hole diameter [mm]	9
Additional information	Adjustment hole 40x11 mm.

K-45-3**Ballast bracket**

Material	Stainless steel
Height [mm]	43
Width [mm]	50
Lenght [mm]	680
Hole diameter [mm]	11
Additional information	

K-45-7**Aluminium roof hook, high**

Material	Aluminium
Height [mm]	170
Width [mm]	50
Lenght [mm]	125
Hole diameter [mm]	2x11
Additional information	

K-45-7-CZ**Aluminium roof hook, high, black**

Material	Aluminium
Height [mm]	170
Width [mm]	50
Lenght [mm]	125
Hole diameter [mm]	2x11
Additional information	Black powder coating.

K-45-8**Aluminium roof hook, low**

Material	Aluminium
Height [mm]	60
Width [mm]	50
Lenght [mm]	105
Hole diameter [mm]	2x11
Additional information	

K-45-8-CZ**Aluminium roof hook, low, black**

Material	Aluminium
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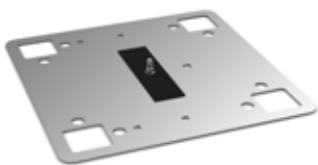
Height [mm]	60
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Width [mm]	50
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Lenght [mm]	105
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Hole diameter [mm]	2x11
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Additional information	Black powder coating.
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K-53-32... 50**Mounting plate installed under the membrane/tar paper**

Material	Stainless steel
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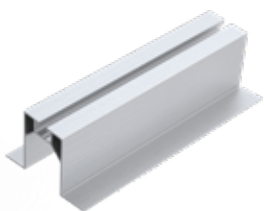
Width [mm]	400
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Lenght [mm]	400
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Mounting bolt	Bolt M10
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Thread lenght [mm]	32 / 50
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Additional information	Correct installation requires completion of the assembly course and the use of a welder. Comes with an M10 screw and a rubber washer.
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K-56**Short mounting rail for steel tile**

Material	Aluminium + EPDM
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Height [mm]	63
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Width [mm]	95
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Lenght [mm]	330 / 470
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Additional information	Mounting with sheet metal screws. Spacer material (EPDM).
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K-56-CZ**Black short mounting rail for steel tile**

Material	Aluminium + EPDM
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Height [mm]	63
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Width [mm]	95
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Lenght [mm]	330 / 470
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Additional information	Mounting with sheet metal screws. Spacer material (EPDM). Black powder coating.
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TRIANGLES

K-07-M

Small adjustable mounting triangle (horizontal orientation of modules)

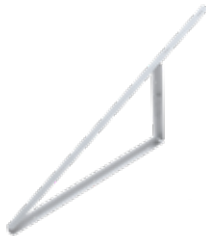


Index	K-07-M-15N	K-07-M-RN
Tilt angle	15°	15°-35° (regulated)
Height [mm]	315	314-633
Hypotenuse [mm]	1075	1075
Lenght [mm]	1000	1000

Additional information Adjustment holes 40x11 mm.

K-07-S

Medium adjustable mounting triangle (vertical orientation of modules)



Index	K-07-S-15N	K-07-S-RN
Tilt angle	15°	15°-35° (regulated)
Height [mm]	490	490-929
Hypotenuse [mm]	1600	1600
Lenght [mm]	1115	1115

Additional information Adjustment holes 40x11 mm.

K-07-D

Trójkąt montażowy duży (pozioma orientacja modułów)



Material	Aluminium
Tilt angle	36°
Height [mm]	1330
Hypotenuse [mm]	2200
Lenght [mm]	1780

Additional information Adjustment holes 40x11 mm.

SCREWS / BOLTS / NUTS

K-04

T-slot nut



Material	Aluminium
Height [mm]	12
Width [mm]	13
Lenght [mm]	22
Hole diameter [mm]	Hexagon socket cap screw with serration M8

Additional information Element for mounting clamps in any place of K-01 and K-25 profiles.

K-16-60... 100**Fastening bolt for roof hooks 60/80/100**

Material	Stainless steel
Height [mm]	64 / 84 / 104
Diameter [mm]	8
Thread length [mm]	60 / 80 / 100
Bolt head diameter [mm]	19
Additional information	Special drilling tip – facilitates screwing without pre-drilling. Bolt socket for Tx40 bit.

K-17-200... 300**Hanger bolt M10 200/250/300**

Material	Stainless steel
Height [mm]	200 / 250 / 300
Diameter [mm]	9
Thread length M10 [mm]	110 / 130 / 150
Thread length dokrokwiewego [mm]	65 / 70 / 80
Additional information	Comes with a seal and three M10 nuts. Recommended pre-drilling 7 mm holes.

K-17-12x250**Hanger bolt M12 250mm**

Material	Stainless steel
Height [mm]	250
Diameter [mm]	9
Thread length M12 [mm]	130
Thread length dokrokwiewego [mm]	70
Additional information	Comes with a seal and three M12 nuts. Recommended pre-drilling 9 mm holes.

K-18-20... 35**Hexagon socket cap screw with serration 20/22/25/30/35**

Material	Stainless steel
Height [mm]	28 / 30 / 33 / 38 / 43
Diameter [mm]	8
Thread length [mm]	20 / 22 / 25 / 30 / 35
Head height [mm]	8
Additional information	

K-19-25... 30

T-bolt M10 25/30



Material	Stainless steel
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Height [mm]	30 / 35
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Diameter [mm]	10
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Thread length [mm]	25 / 30
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Bolt head dimensions [mm]	10x23x5
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Additional information	
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K-20

Sheet metal screw M6



Material	Stainless steel
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Height [mm]	30
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Diameter [mm]	6
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Thread length [mm]	25
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Washer diameter [mm]	16
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Additional information	Comes with an EPDM gasket washer.
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K-21

Hexagon flange nut with serration M10



Material	Stainless steel
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Height [mm]	10
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Flange diameter [mm]	21
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Flange height [mm]	2
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Additional information	Serration on the underside of the flange.
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K-28-20... 30

Hex cap bolt M10 20/30



Material	Stainless steel
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Height [mm]	26 / 36
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Diameter [mm]	17
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Thread length [mm]	20 / 30
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Bolt head height [mm]	6
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Additional information	
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K-43-21... 27

Hanger bolt for steel rafters M8 210/270mm



Material	Stainless steel
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Height [mm]	210 / 270
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Diameter [mm]	7
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Thread length M8 [mm]	63
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Thread length M10 [mm]	43 / 63
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Additional information	
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ACCESSORIES / ELECTRIC COMPONENTS

K-27-CZ



Mounting profile cap black

Material Plastic

Height [mm] 31

Width [mm] 44

Length [mm] 44

Additional information

K-27-SZ



Mounting profile cap grey

Material Plastic

Height [mm] 31

Width [mm] 44

Length [mm] 44

Additional information

K-27-SZ-80



Mounting profile cap grey

Material Plastic

Height [mm] 80

Width [mm] 40

Length [mm] 30

Additional information

K-31



Bolt with flange nut for optimizer fastening

Material Stainless steel

Height [mm] 25

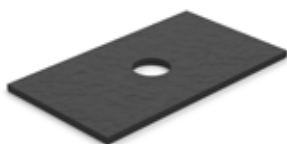
Diameter [mm] 8

Thread length [mm] 20

Bolt head dimensions [mm] 10x23x4

Additional information Used to fasten optimizers to the mounting system.
Consists of an M8 T-bolt and an M8 flange nut.

K-32



EPDM separator – small

Material Synthetic rubber

Thickness [mm] 2

Width [mm] 40

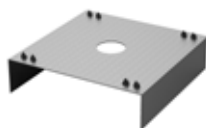
Length [mm] 70

Hole diameter [mm] 11

Additional information Element used as a spacer between aluminium profiles and galvanised steel elements.

K-37-70...100**Wall plug 14x70mm/14x100mm**

Material	Plastic
Height [mm]	70 / 100
Diameter [mm]	14
Additional information	

K-39**Grounding washer**

Material	Stainless steel
Height [mm]	10
Width [mm]	41
Lenght [mm]	40
Hole diameter [mm]	9
Additional information	

K-41**EPDM separator – large**

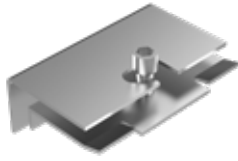
Material	Synthetic rubber
Height [mm]	2
Width [mm]	85
Lenght [mm]	175
Hole diameter [mm]	11
Additional information	

K-45-4**Ballast rubber plate 320x450x4mm**

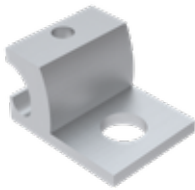
Material	EPDM
Thickness [mm]	3
Width [mm]	320
Lenght [mm]	450
Additional information	

K-45-5**Ballast rubber plate 200x250x4mm**

Material	EPDM
Thickness [mm]	3
Width [mm]	200
Lenght [mm]	250
Additional information	

K-42**Universal bracket for fastening an optimizer to the module frame**

Material	Stainless steel
Height [mm]	60
Width [mm]	90
Lenght [mm]	30
Additional information	Thickness 2 mm. Comes with a 22 mm hexagon socket cap screw with serration.

K-46**Grounding holder**

Material	Aluminium
Height [mm]	22
Width [mm]	38
Lenght [mm]	40
Hole diameter [mm]	11
Additional information	

K-49**Cable tie fastener to the module frame**

Material	Plastic
Lenght [mm]	200
Width [mm]	5
Additional information	Fastening for mounting directly to the module frame.

K-49-K**Cable clip fastener to the module frame**

Material	Stainless steel
Height [mm]	18
Lenght [mm]	22
Width [mm]	9
Additional information	Fastening for mounting directly to the module frame.

K-52-F**Ground rod 2x1500 mm with clamp**

Material	Hot-dip galvanised steel
Lenght [mm]	2x 1500
Diameter [mm]	14
Additional information	

K-52-FP**1500 mm ground rod extension**

Material	Hot-dip galvanised steel
Lenght [mm]	1500
Diameter [mm]	14
Additional information	Vertical earth electrode of a PV system.

K-65-1**Vinylester chemical anchor**

Material	Vinylester, styrene-free resin
Packaging	Cartridge 300 ml
Additional information	Non-expansion chemical anchor for mounting system elements, for concrete, stone and clay bricks (solid and hollow).

K-65-2**Mixing nozzle for the chemical anchor**

Material	Plastic
Additional information	Mixing nozzle for use with chemical anchors in cartridges, ensuring even anchor component mixing during extrusion

K-68**Threaded pin DIN976 A2-70 M10x1000**

Material	Stainless steel
Lenght [mm]	1000
Diameter [mm]	10
Additional information	

K-72**SikaLastomer-710 sealant – bituminous coating 600ml**

Material	1-component butyl rubber
Packaging	Unipack 600 ml
Additional information	Professional product for resistant and ductile bituminous coating sealing in places where commonly used sealant do not provide full waterproofness.

K-73**SikaBond TF Plus N sealant – sheet metal/tiles 600ml**

Material	1-component, PU-based adhesive
Packaging	Unipack 600 ml
Additional information	Professional sealant with high mechanical durability while maintaining flexibility, for use as an additional sheet and tile roof coating sealing.

K-77**Flexible casing pipe UV with protective jacket 1250 N 50m****Inside diameter [mm]**

18,4

Additional information

UV-resistant.
Teflon inner layer.
Can be used outdoors, indoors in concrete and earth

K-78**Flexible casing pipe UV with protective jacket 1250 N 50m****Inside diameter [mm]**

24,1

Additional information

UV-resistant.
Teflon inner layer.
Can be used outdoors, indoors in concrete and earth.

K-79**Casing pipe connector UV 25mm****Additional information**

Packaging 25 pcs.
UV-resistant.
Push-in connector for connections of casing pipe, intended for use with the K-77.

K-80**Casing pipe connector UV 32mm****Additional information**

Packaging 25 pcs.
UV-resistant.
Push-in connector for connections of casing pipe, intended for use with the K-78.

K-81**Casing pipe wall mount 25mm****Additional information**

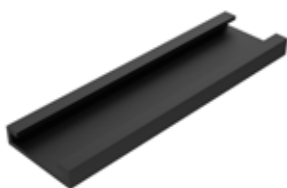
Packaging 50 pcs.
UV-resistant.
Casing pipe wall mount for use with the K-77.

K-82**Casing pipe wall mount 32mm****Additional information**

Packaging 50 pcs.
UV-resistant.
Casing pipe wall mount for use with the K-78.

K-83

EPDM hook edge support 30x120mm



Material	EPDM
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Height [mm]	8
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Width [mm]	30
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Lenght [mm]	120
-------------	-----

Additional information

TOOLS

K-50

MC4 connector tester



Additional information

Verification of correct and safe assembly of MC4 connectors.
MC4 Stäubli compatible.

KPVMC4

Wrench for MC4 connectors



Additional information

Designed for mounting and dismounting MC4 connectors.
Equipped with grooves for dismounting MC4 connectors.

ZPVMC4

Crimping pliers for MC4 connectors



Additional information

3 work sockets.
Designed to make MC4 connectors on wires with a cross-section: 2,5mm², 4mm², 6mm².

SM-PV

PV module simulator - 143-286 VDC; 0,7A



Additional information

Simulator with prepared MC4, SunClix, Amphenol connectors.
Enables configuration and commissioning of inverters after dark or in the absence of sufficient voltage and current parameters from PV modules.

610 924 KENO

AC toolkit RENNSTEIG WERA



Manufacturer

Rennsteig

Includes

1. Crimping pliers for MC4 connectors Rennsteig / KENO
2. Stripping tool 4-10mm² - Rennsteig / KENO
3. Wera Allen key
4. Wera ratcheting combination wrench with anti-slip protection
5. Cable cutters KENO
6. Wrench for MC4 connectors Knipex
7. MC4 connector tester

624 105-58 KENO

DC toolkit RENNSTEIG WERA



Manufacturer

Rennsteig

Includes

1. Stripping tool 0.08-16mm² Rennsteig / KENO
2. Crimping pliers 0,14-16 Rennsteig / KENO
3. Torque screwdriver 1,7-3,5Nm with bit set

CONNECTORS 

K-02

Mounting profile connector



Material

Aluminium

Height [mm]

25

Width [mm]

45

Lenght [mm]

115

Hole diameter [mm]

11

Additional information

K-02-CZ

Black mounting profile connector



Material

Aluminium

Height [mm]

25

Width [mm]

45

Lenght [mm]

120

Hole diameter [mm]

11

Additional information

Anodized/Black powder coating.

K-02-R**Regulated mounting profile connector**

Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	115
Hole diameter [mm]	11

Additional information**K-03****Mounting adapter**

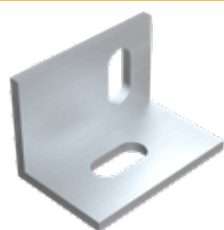
Material	Stainless steel
Width [mm]	30
Lenght [mm]	80
Hole diameter [mm]	11

Additional information Adjustment hole 40x11 mm.

K-03-13**Mounting adapter with 13mm adjustment hole**

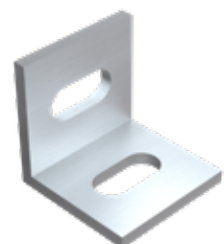
Material	Stainless steel
Width [mm]	30
Lenght [mm]	80
Hole diameter [mm]	13

Additional information Adjustment hole 40x13 mm.

K-23**High angle connector – for connecting profiles**

Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	60

Additional information „Bean“-type mounting hole.
Two adjustment holes 23x11 mm.
Used to connect mounting profiles at a 90° angle.

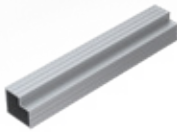
K-29**Low angle connector – for connecting profiles**

Material	Aluminium
Height [mm]	40
Width [mm]	40
Lenght [mm]	37

Additional information „Bean“-type mounting hole.
Two adjustment holes 23x11 mm.
Used to connect K-26 profiles at a 90° angle.

K-40**Stainless steel connector (free-standing installation)**

Material	Stainless steel
Height [mm]	80
Width [mm]	25
Lenght [mm]	40
Additional information	Two adjustment holes 23x11 mm. Used to connect the K-25 rail with the K-01 rail.

K-45-6**Connector for ballasted installation**

Material	Aluminium
Height [mm]	29
Width [mm]	33
Lenght [mm]	200
Additional information	

CLAMPS □**K-05****Universal mid clamp**

Material	Aluminium
Height [mm]	25
Width [mm]	36
Lenght [mm]	50
Hole diameter [mm]	9
Additional information	Serration at the module installation point.

K-05-CZ**Universal mid clamp black**

Material	Aluminium
Height [mm]	25
Width [mm]	36
Lenght [mm]	50
Hole diameter [mm]	9
Additional information	Serration at the module installation point. Black powder coating.

K-05-ACZ**Universal mid clamp anodized**

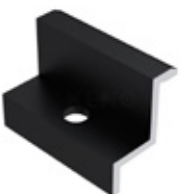
Material	Aluminium
Height [mm]	25
Width [mm]	36
Lenght [mm]	50
Hole diameter [mm]	9
Additional information	Serration at the module installation point. Anodized.

K-06-35... 40**End clamp 30/35/38/40**

Material	Aluminium
Module frame thickness [mm]	30 / 35 / 38 / 40
Width [mm]	27
Height [mm]	33-43
Hole diameter [mm]	9
Additional information	Serration at the module installation point.

K-06-35... 40-CZ**End clamp black 30/35/38/40**

Material	Aluminium
Module frame thickness [mm]	30 / 35 / 38 / 40
Width [mm]	27
Height [mm]	33-43
Hole diameter [mm]	9
Additional information	Serration at the module installation point. Black powder coating.

K-06-35-ACZ**End clamp anodized 35**

Material	Aluminium
Module frame thickness [mm]	35
Width [mm]	27
Height [mm]	33-43
Hole diameter [mm]	9
Additional information	Serration at the module installation point. Anodized.

□ FREE-STANDING SUPPORTS

K-22RP**Free-standing single-support system with two arms**

Material	Hot-dip galvanised steel
Post height [mm]	2800
Tilt angle	28°
Additional information	Minimum insertion depth 1300 mm. Enables installation in three horizontal rows and two vertical rows.

K-22RP-MAG**Free-standing single-support system with two arms
Magnelis® coating**

Material	Steel with Magnelis® coating
Post height [mm]	2800
Tilt angle	28°
Additional information	Minimum insertion depth 1300 mm. Enables installation in three horizontal rows and two vertical rows.

K-33**Free-standing double-support system**

Material	Hot-dip galvanised steel
Rear post height [mm]	3500
Front post height [mm]	2500
Tilt angle	0-35° (regulated)
Additional information	Minimum insertion depth 1300 mm. Enables installation in four horizontal rows and two vertical rows.

K-33-MAG**Free-standing double-support system**

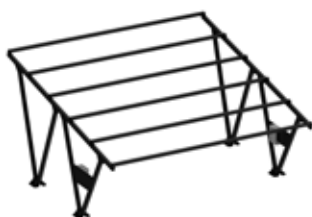
Material	Steel with Magnelis® coating
Post height tylnej [mm]	3270
Post height przedniej [mm]	2175
Tilt angle	0-35° (regulated)
Additional information	Minimum insertion depth 1300 mm. Enables installation in four horizontal rows and two vertical rows. Enables bifacial modules installation.

K-47**Rack for hanging the inverter**

Material	Steel with Magnelis® coating
Post height [mm]	2800
Transverse rail width [mm]	2000
Hole diameter [mm]	11
Additional information	Minimum insertion depth 1300 mm.

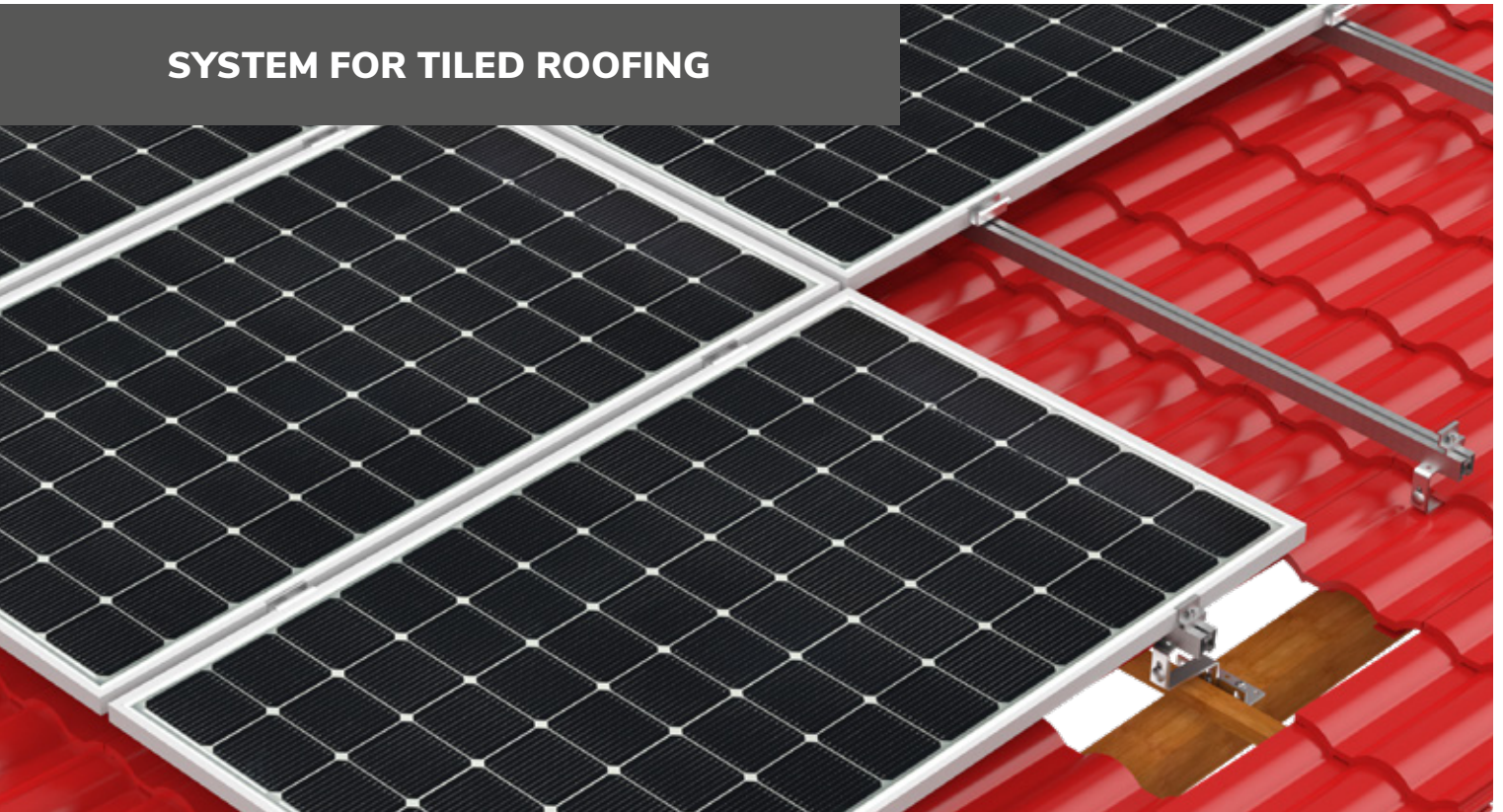
K-54**Free-standing system for large scale projects**

Material	Steel with Magnelis® coating
Rear post height [mm]	3110
Front post height [mm]	2175
Tilt angle	25°
Additional information	Minimum insertion depth 1300 mm. Enables installation in four horizontal rows. Max modules per section – 40 pcs. Available on special request – please contact your Customer Advisor.

W-02**Carport**

Material	Stal
Height [mm]	3300
Width [mm]	6050
Lenght [mm]	5770
Tilt angle	12°
Additional information	Dimensions may vary depending on solar module model. Black powder coating. Available on special request – please contact your Customer Advisor.

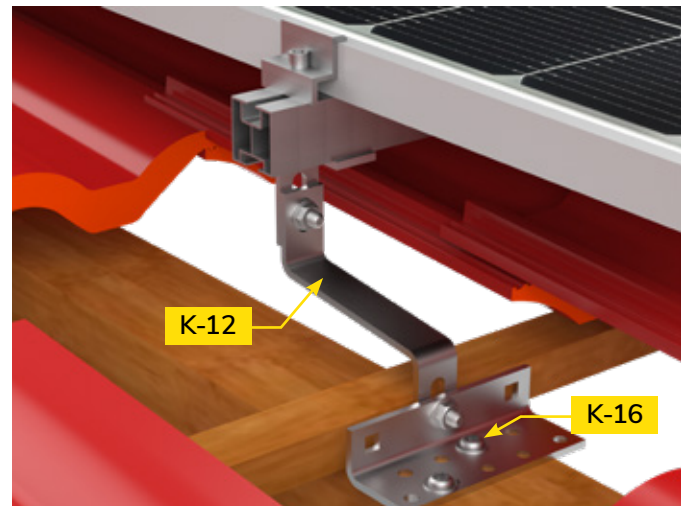
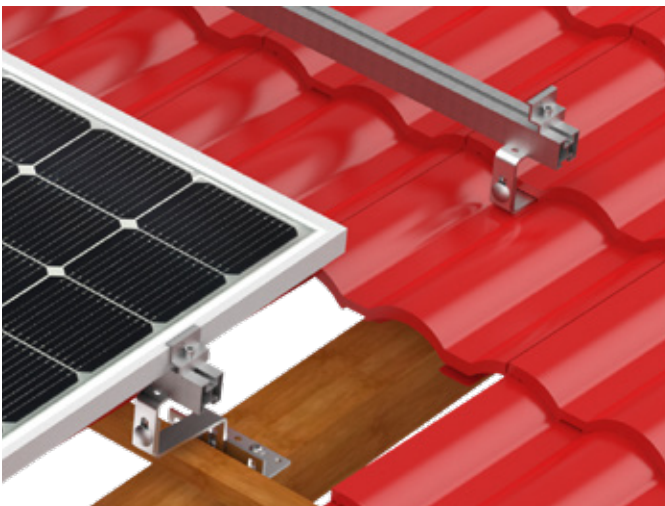
SYSTEM FOR TILED ROOFING



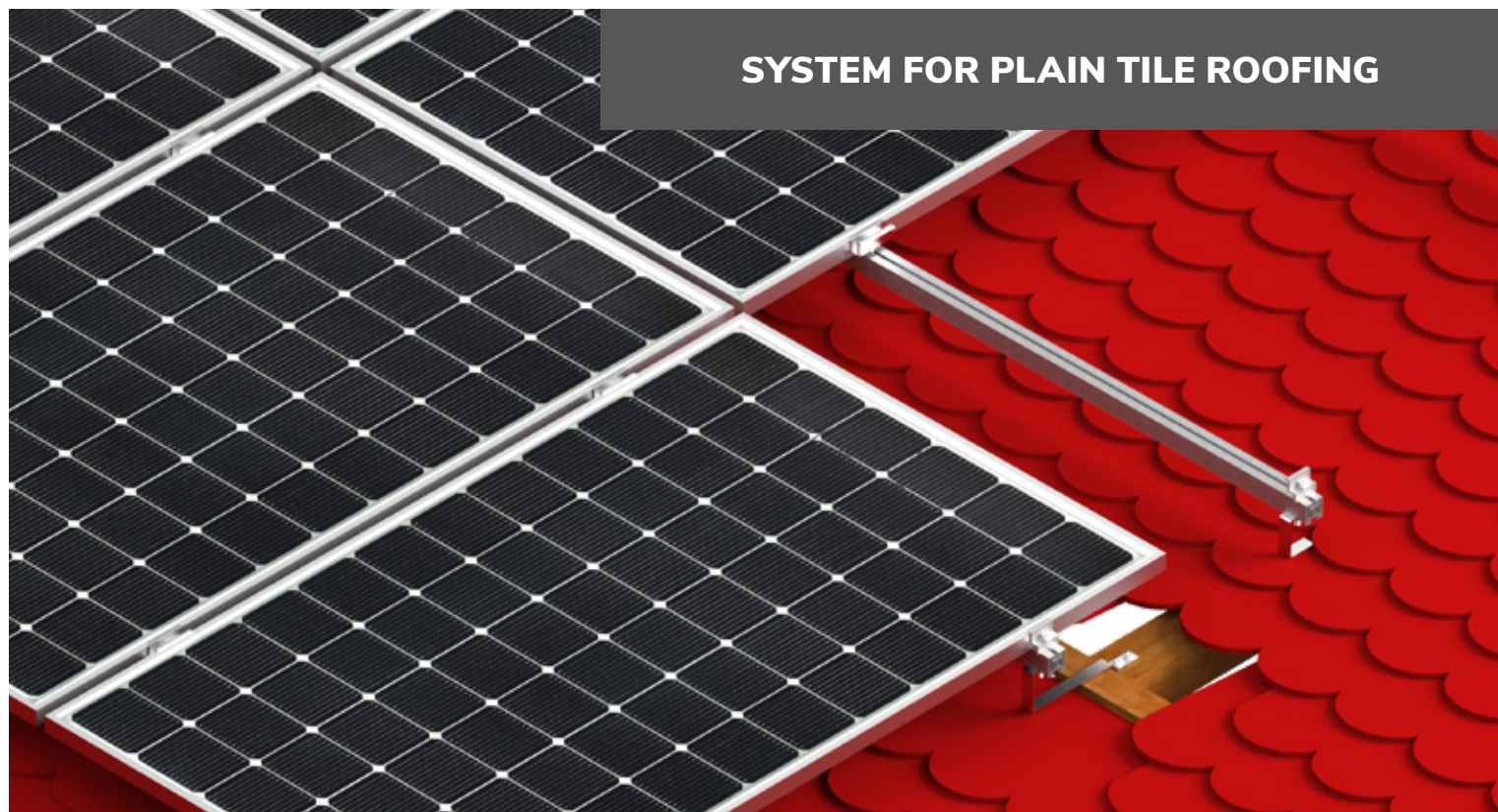
3. PRODUCTS

Material	Stainless steel / aluminium
Installation method	Mounting to the roof structure
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Alternative mounting methods	K-12, K-12-L, K-12+3, K-12-Strong
Notes	Systems for pitched roofs may extend up to 300 mm beyond the mounting point.

4. MOUNTING SYSTEMS

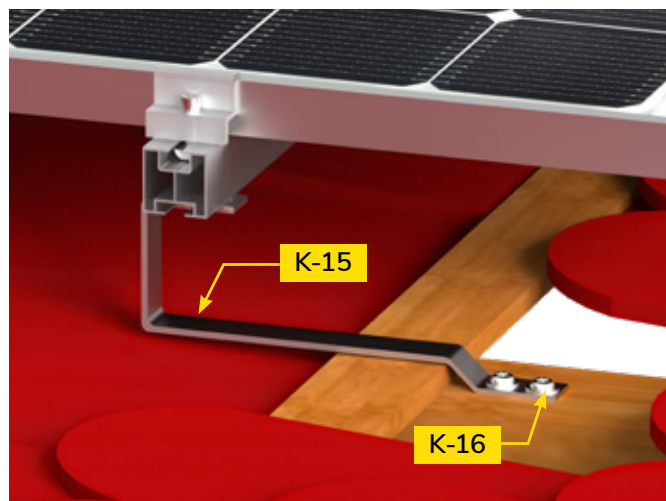
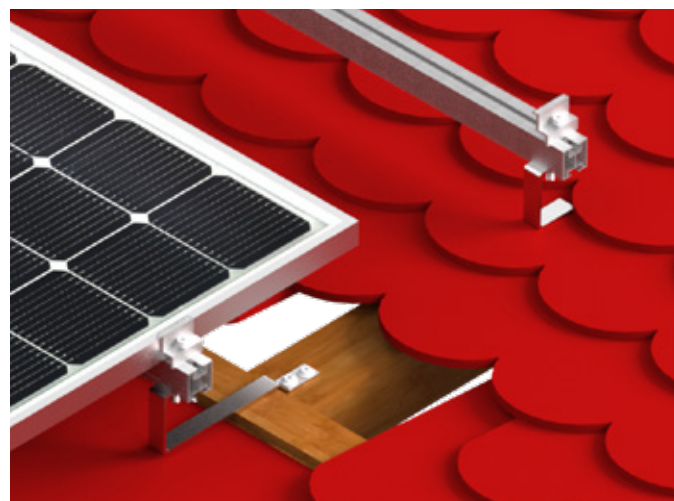


☐ FOR PITCHED ROOFS



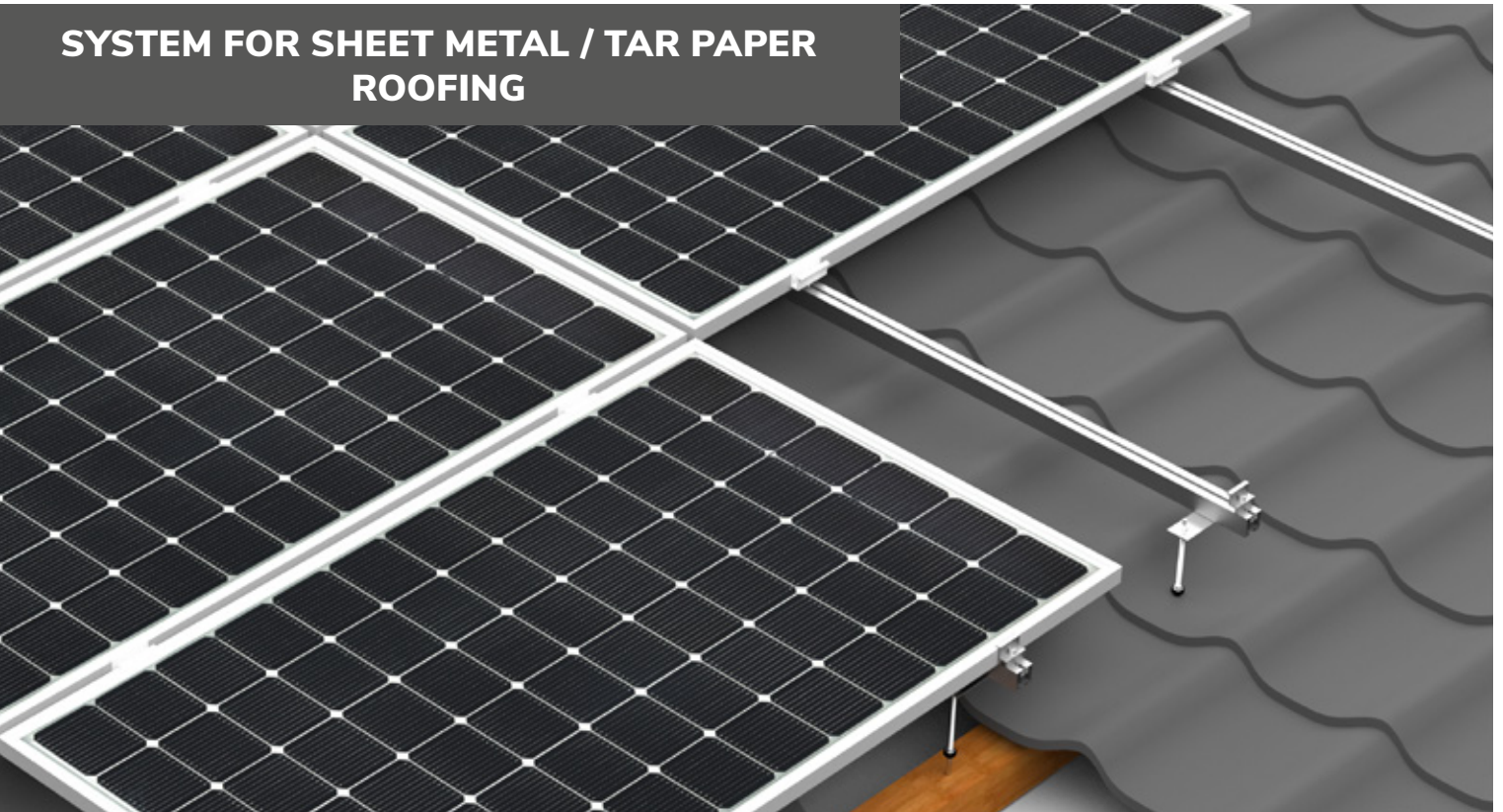
Material	Stainless steel / aluminium
Installaton method	Mounting to the roof structure
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Alternative mounting methods	K-15, K-15-R, K-44, K-44-W
Notes	Systems for pitched roofs may extend up to 300 mm beyond the mounting point.

3. PRODUCTS



4. MOUNTING SYSTEMS

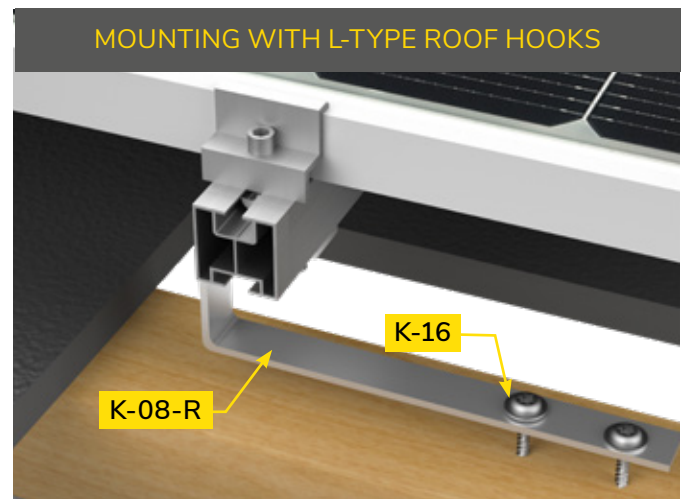
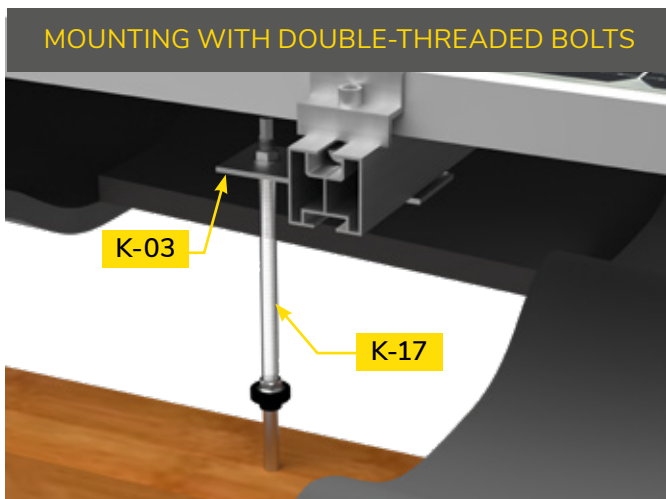
SYSTEM FOR SHEET METAL / TAR PAPER ROOFING



3. PRODUCTS

Material	Stainless steel / aluminium
Installation method	Mounting to the roof structure
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Alternative mounting methods	K-17, K-43, K-08-R
Notes	Systems for pitched roofs may extend up to 300 mm beyond the mounting point. For shingled roofing it is recommended to use hanger bolts and to seal EPDM with a roofing sealant.

4. MOUNTING SYSTEMS



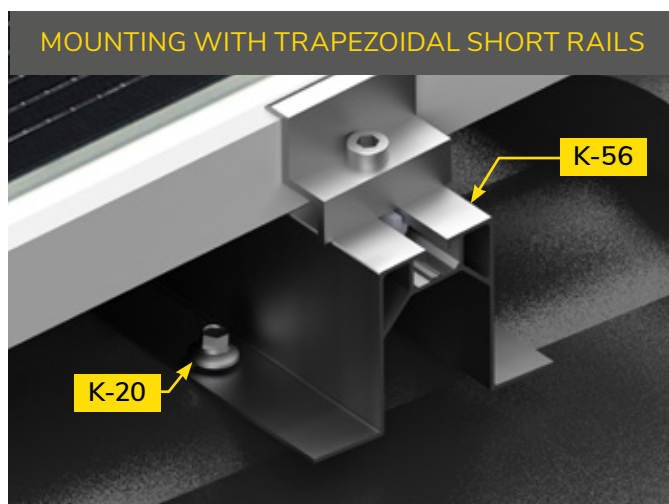
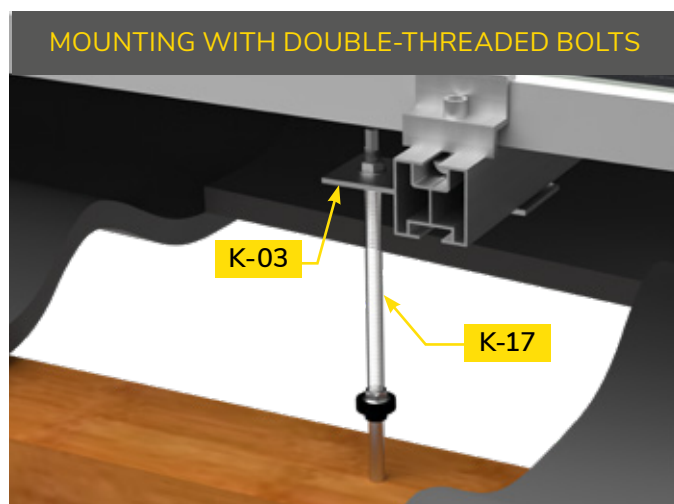
☐ FOR PITCHED ROOFS



SYSTEM FOR STEEL TILE ROOFING

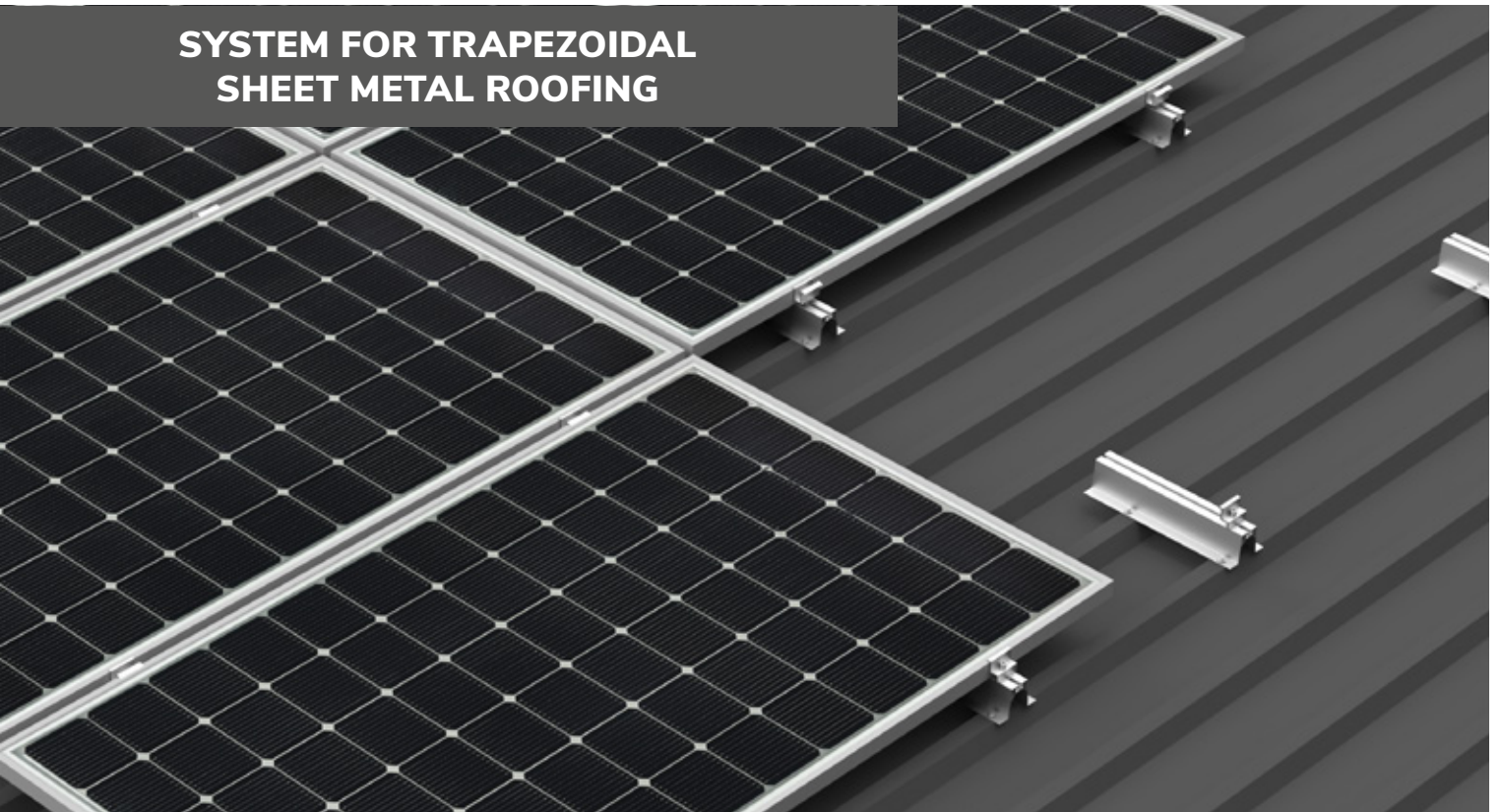
Material	Stainless steel / aluminium
Installation method	Mounting to the roof structure / to the roof sheeting
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Notes	Systems for pitched roofs may extend up to 300 mm beyond the mounting point. Min. required sheet thickness for mounting with a trapezoidal short rail is 0,4 mm.

3. PRODUCTS



4. MOUNTING SYSTEMS

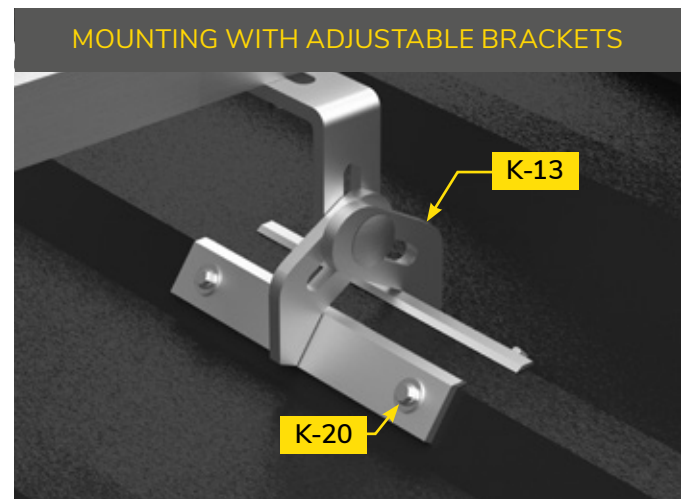
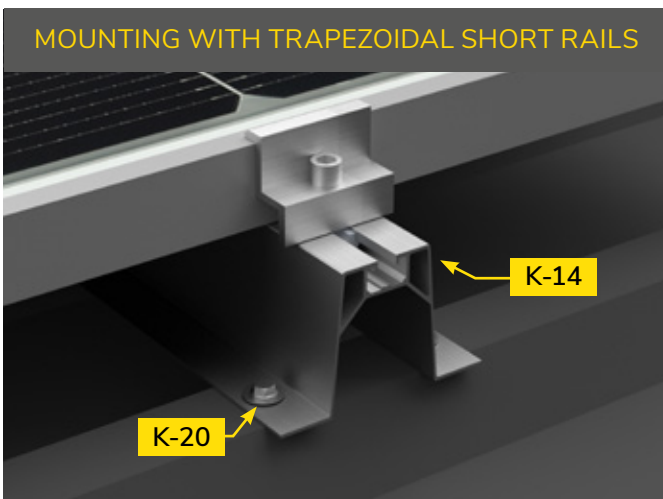
SYSTEM FOR TRAPEZOIDAL SHEET METAL ROOFING



3. PRODUCTS

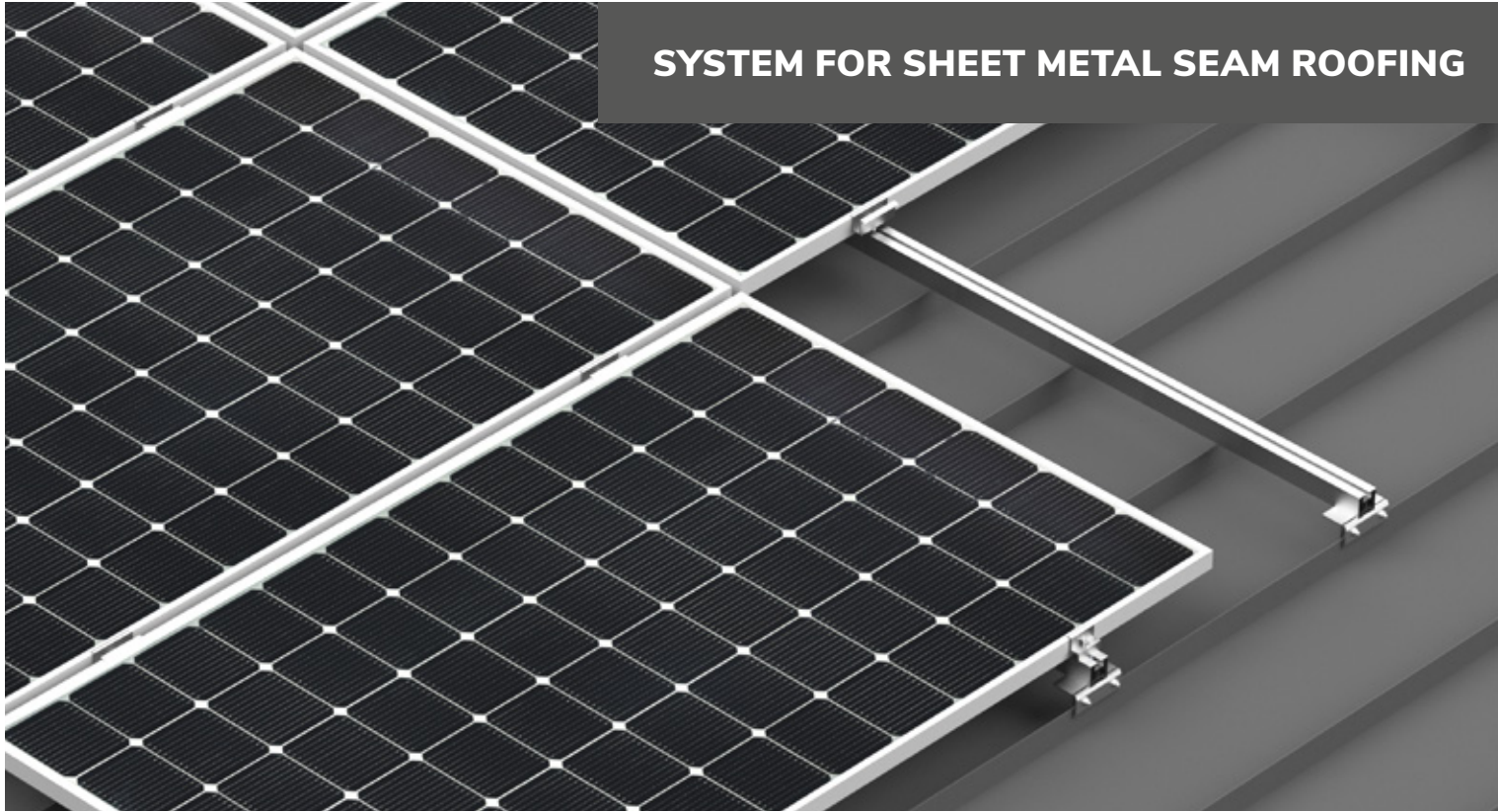
Material	Stainless steel / aluminium
Installation method	Mounting to the roof sheeting
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Notes	Systems for pitched roofs may extend up to 300 mm beyond the mounting point. Min. required sheet thickness for mounting with a trapezoidal short rail is 0,4 mm. Enables mounting trapezoidal short rails in vertical orientation on a trapezoidal sheet roofing.

4. MOUNTING SYSTEMS



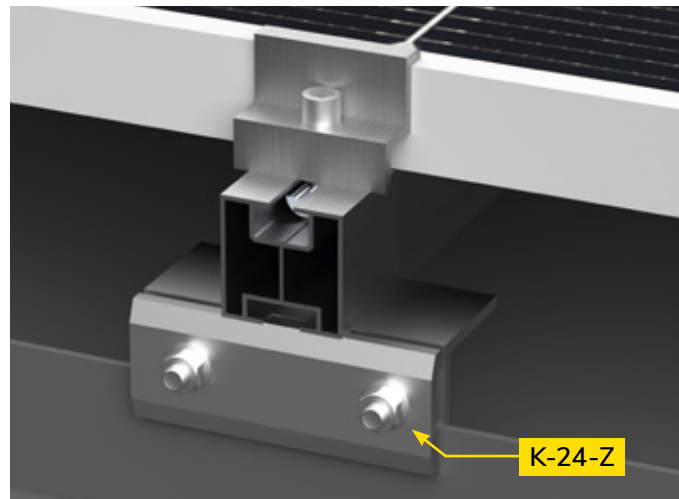
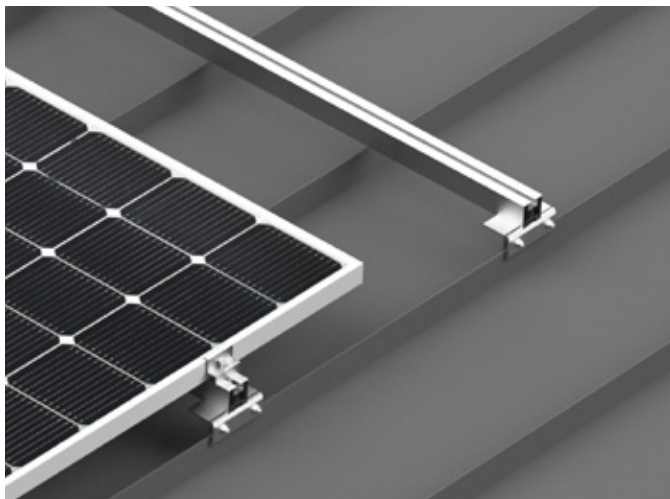
☐ FOR PITCHED ROOFS

SYSTEM FOR SHEET METAL SEAM ROOFING



Material	Stainless steel / aluminium
Installation method	Mounting to the roof sheeting
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Notes	Max seam thickness for a system for standing seam roofing is 15 mm. Systems for pitched roofs may extend up to 300 mm beyond the mounting point.

3. PRODUCTS



4. MOUNTING SYSTEMS

MOUNTING CONSTRUCTION FOR SANDWICH PANELS

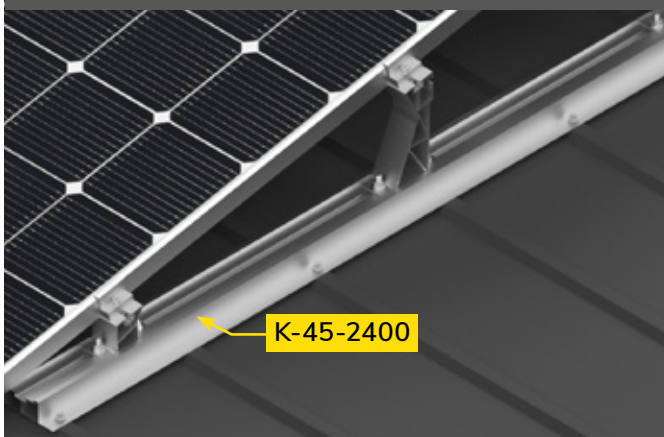


Material	Aluminium
Installation method	Mounting to the roof sheeting
Tilt angle	11°
Modules arrangement	Horizontal
Product warranty	10 years
Notes	Min. roof edge distance for systems for pitched roofs is 1000 mm. Min. required sheet thickness for mounting using mounting rails is 0,4 mm. Enables installation on sandwich panels roofs.

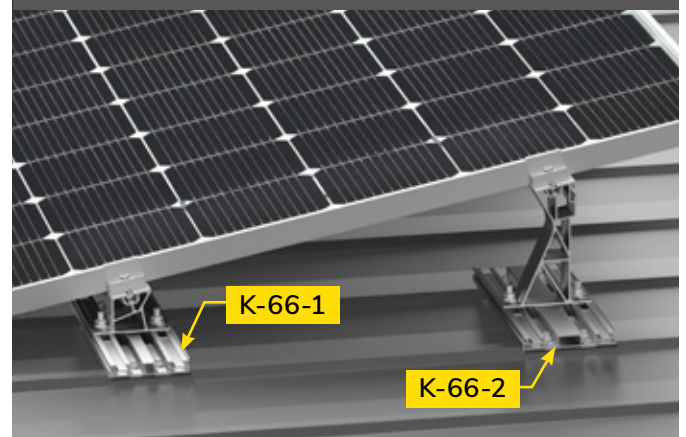
3. PRODUCTS

4. MOUNTING SYSTEMS

MOUNTING USING LONGITUDINAL RAILS

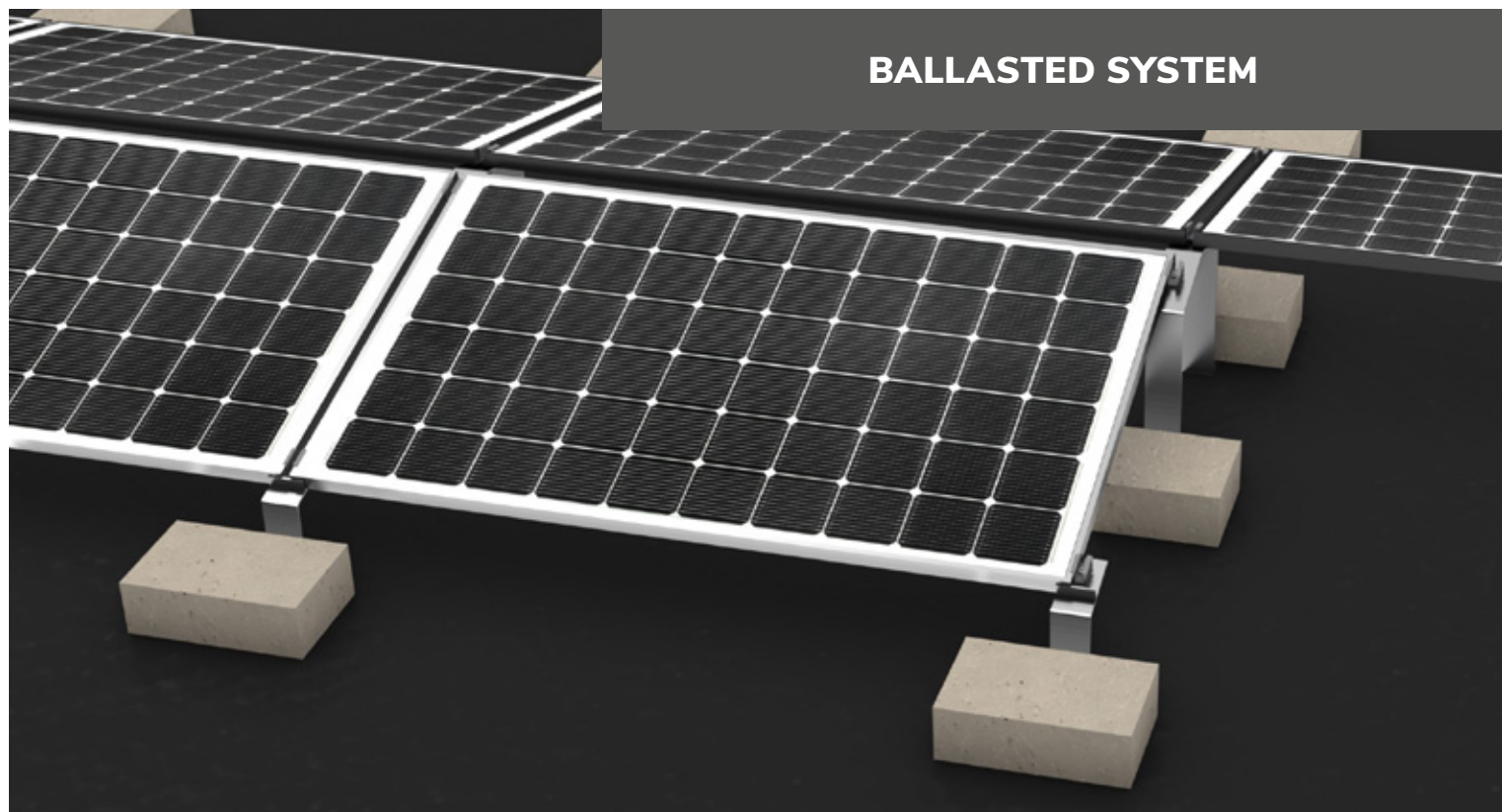


MOUNTING USING TRANSVERSE RAILS



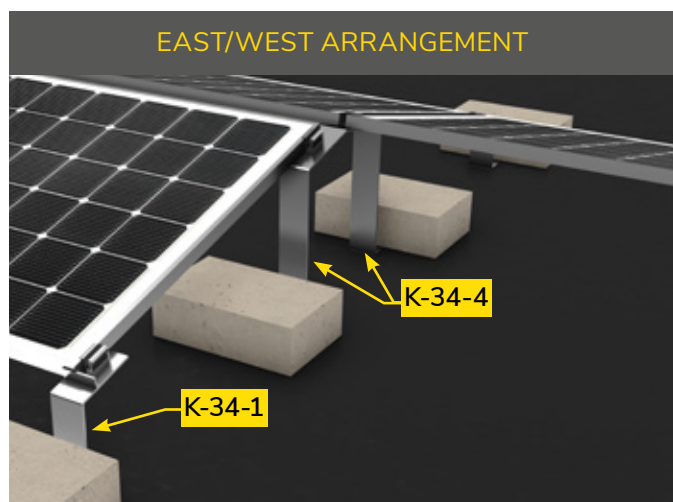
TOTAL WEIGHT OF MOUNTING STRUCTURE IS CALCULATED AT B2B PLATFORM AND SPECIFIED ON MODULE SELECTION BAR IN „MOUNTING SYSTEM” TAB”

FOR FLAT ROOFS

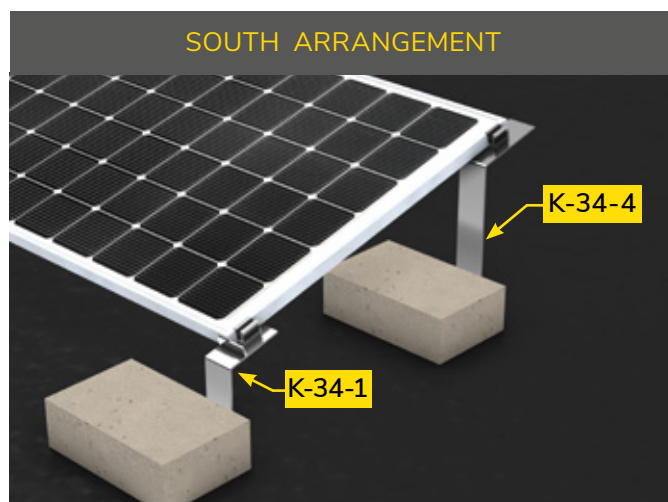


BALLASTED SYSTEM

Material	Aluminium
Installation method	Non-invasive mounting
Tilt angle	14°
Modules arrangement	Horizontal
Product warranty	10 years
Notes	For ballasted systems only horizontal module orientation is permitted. Min. roof edge distance for systems for pitched roofs is 1000 mm.

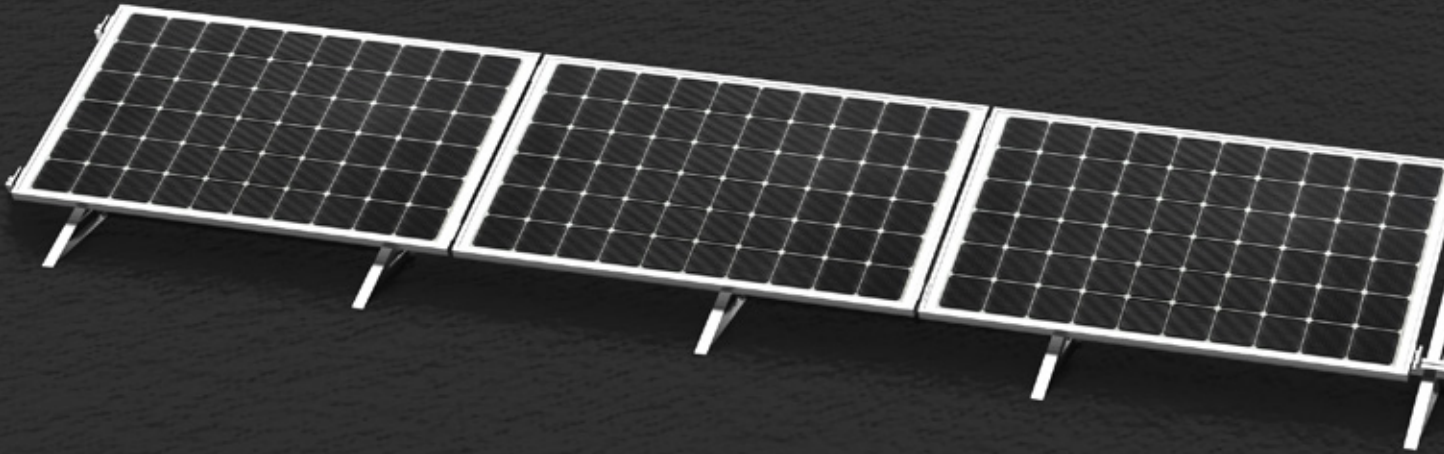


EAST/WEST ARRANGEMENT



SOUTH ARRANGEMENT

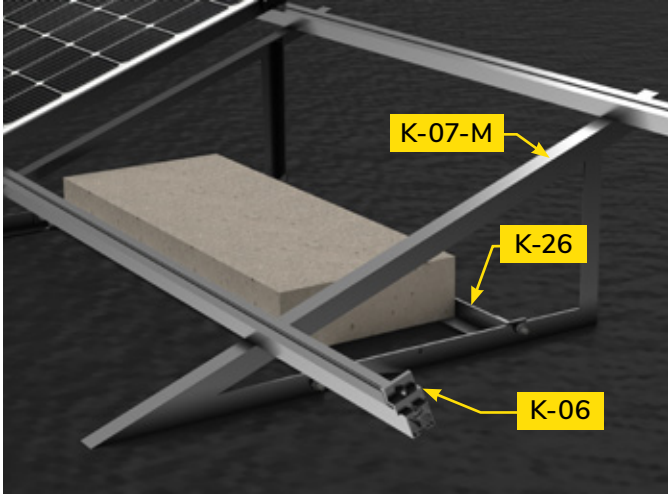
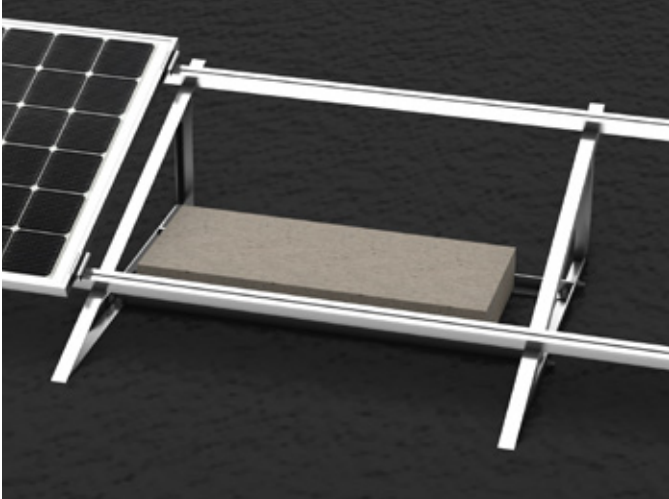
BALLASTED SYSTEM INSTALLED ON TRIANGLES



3. PRODUCTS

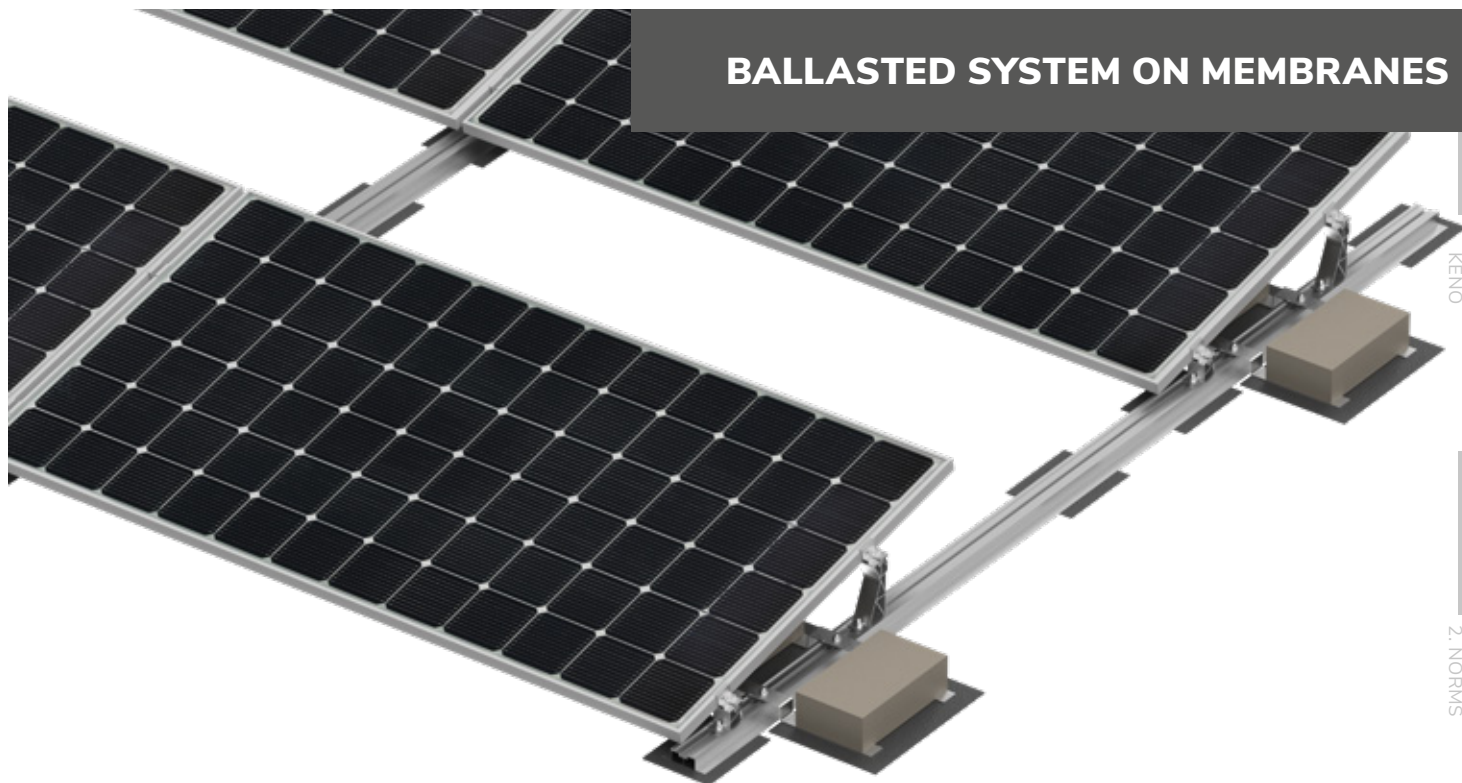
Material	Aluminium
Installaton method	Non-invasive mounting
Tilt angle	15-25°
Modules arrangement	Horizontal
Product warranty	10 years
Notes	For ballasted systems only horizontal module orientation is permitted. Min. roof edge distance for systems for pitched roofs is 1000 mm.

4. MOUNTING SYSTEMS



FOR FLAT ROOFS

BALLASTED SYSTEM ON MEMBRANES

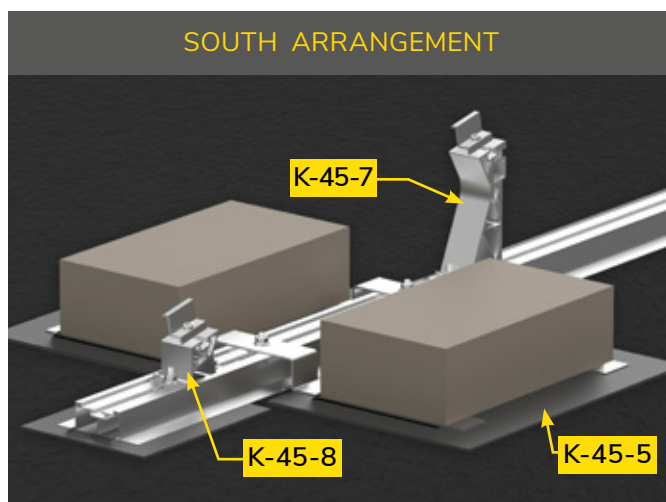
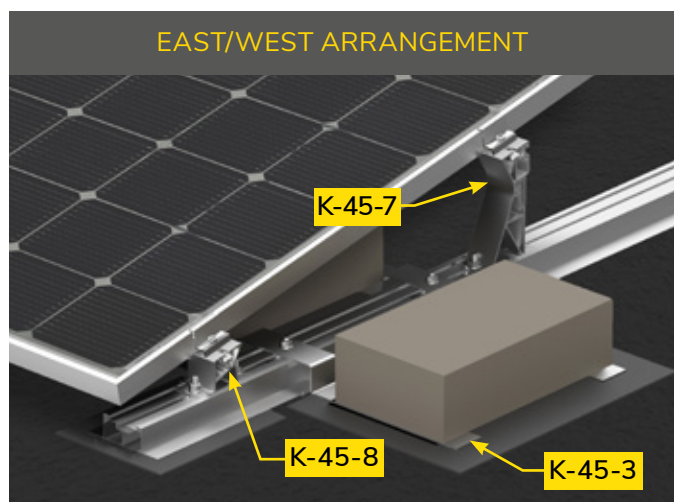


KENO

2. NORMS

Material	Aluminium
Installation method	Non-invasive mounting
Tilt angle	11°
Modules arrangement	Horizontal
Product warranty	10 years
Notes	For ballasted systems only horizontal module orientation is permitted. For ballasted systems on membrane the ballast is placed every other rail. Min. roof edge distance for systems for pitched roofs is 1000 mm.

3. PRODUCTS



4. MOUNTING SYSTEMS

WELDED CONSTRUCTION WITH MOUNTING RAILS

1. KENO

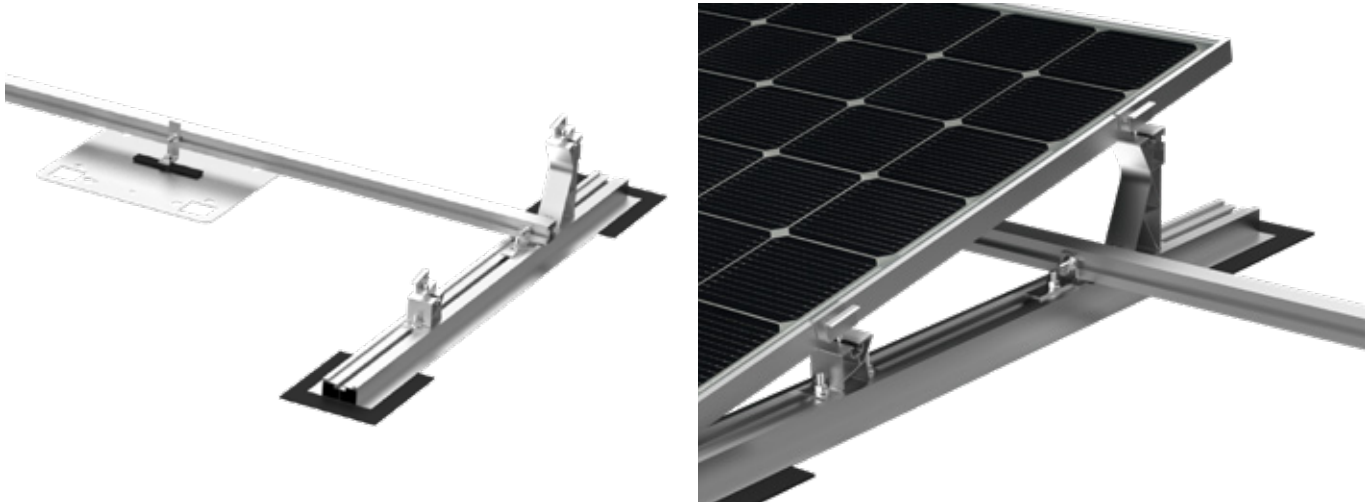
2. NORMS

3. PRODUCTS

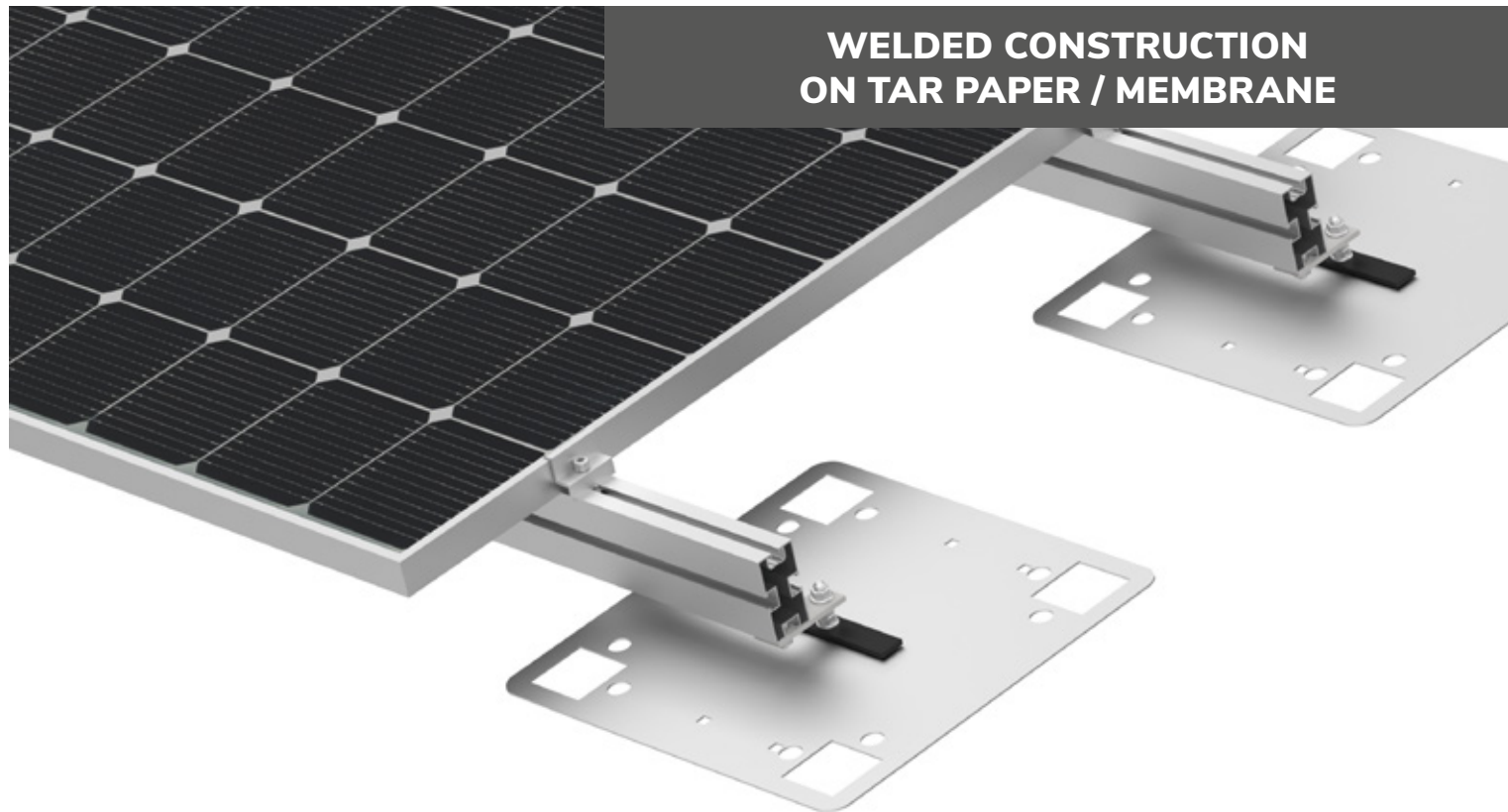
4. MOUNTING SYSTEMS



Material	Stainless steel / aluminium
Installaton method	Non-invasive mounting
Tilt angle	11°
Modules arrangement	Horizontal
Product warranty	10 years
Notes	Min. roof edge distance for systems for pitched roofs is 1000 mm. To fulfill the requirements of the guarantee, installer must undergo a mounting plate assembly course at the plates manufacturer site.

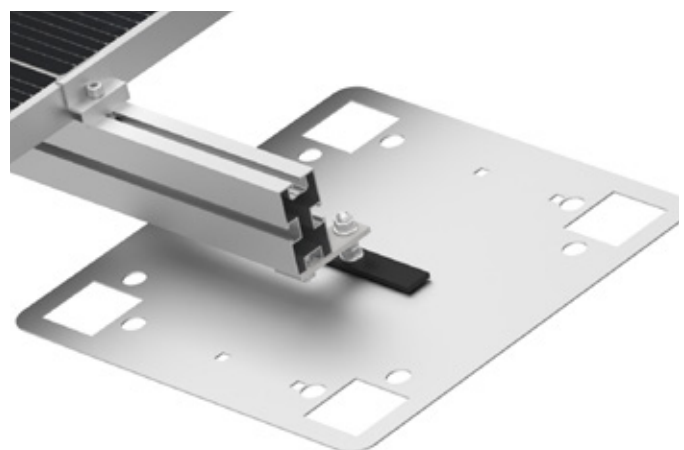
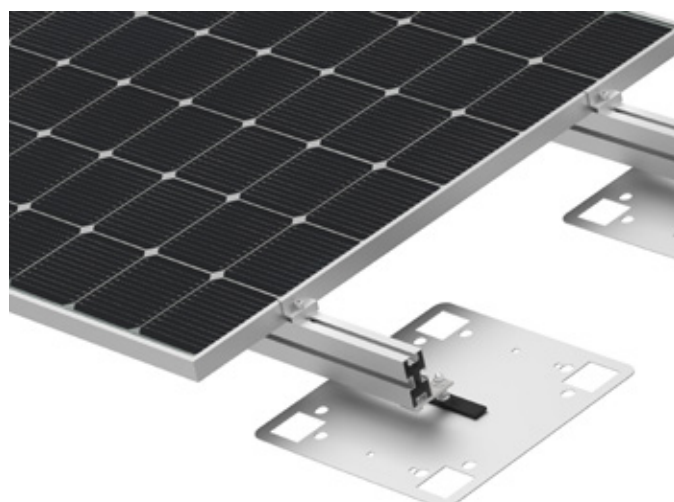


☐ FOR FLAT / DOME / PITCHED ROOFS

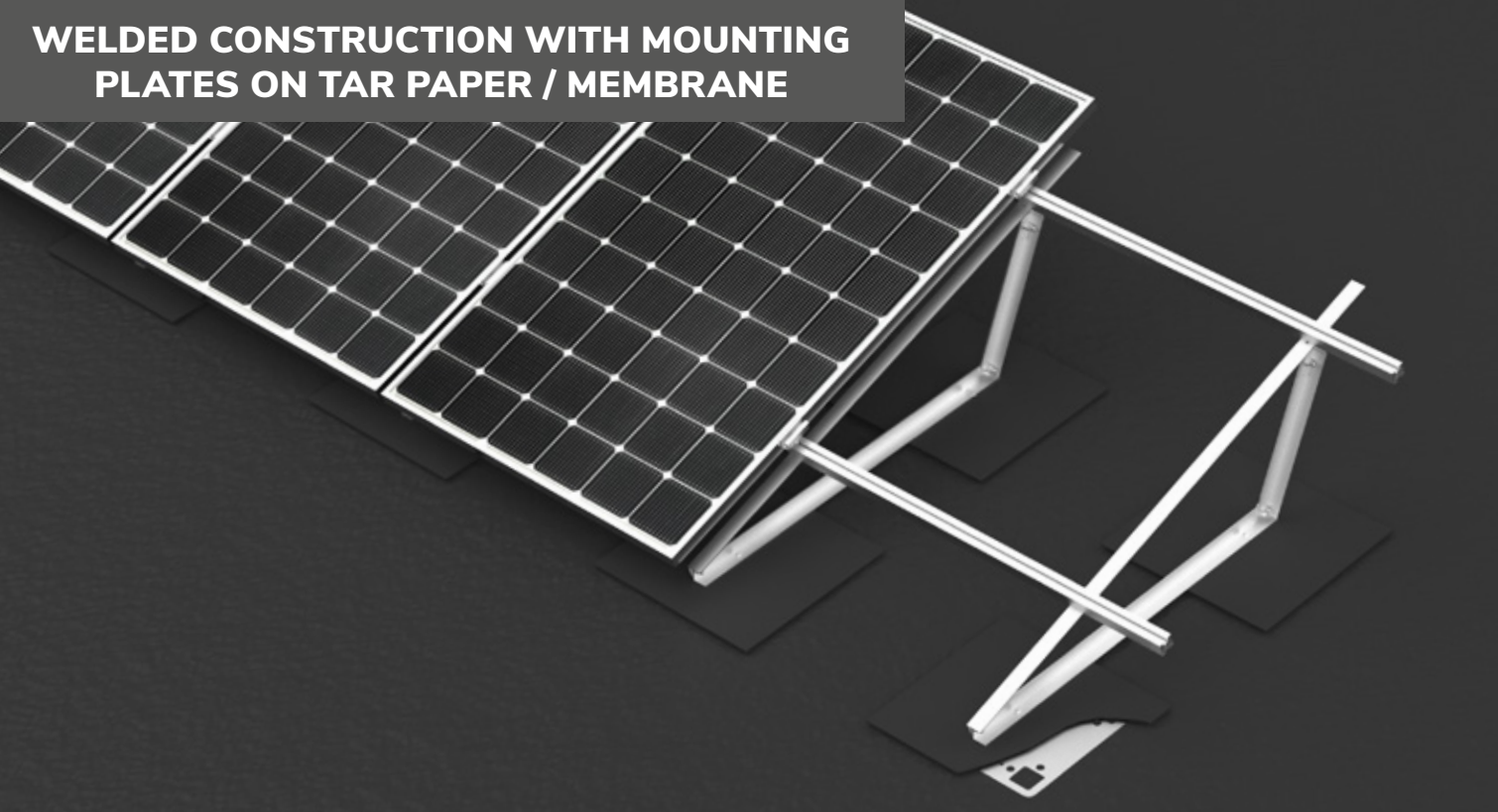


**WELDED CONSTRUCTION
ON TAR PAPER / MEMBRANE**

Material	Stainless steel / aluminium
Installation method	Non-invasive mounting
Tilt angle	Equal to the roof slope
Modules arrangement	Vertical or horizontal
Product warranty	10 years
Notes	Min. roof edge distance for systems for pitched roofs is 300 mm. Enables installation on cylindrical and dome roofs. To fulfill the requirements of the guarantee, installer must undergo a mounting plate assembly course at the plates manufacturer site.



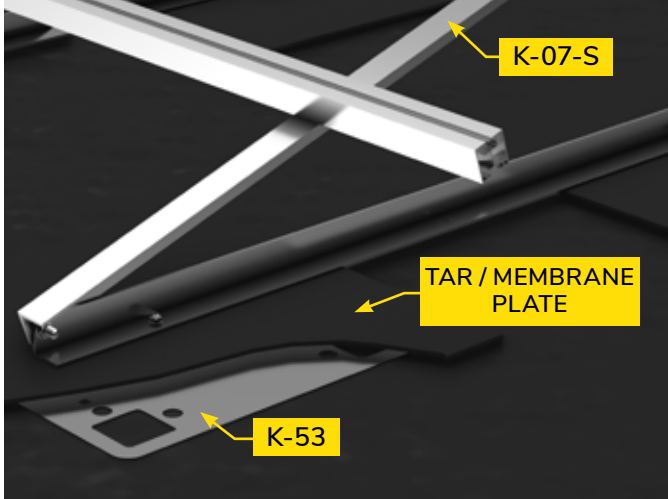
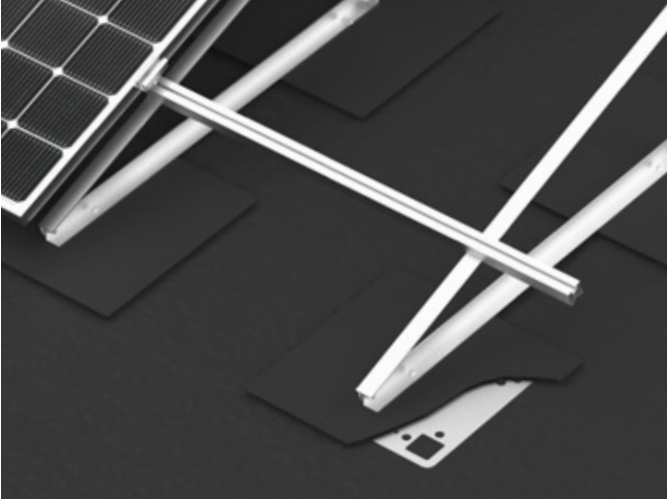
WELDED CONSTRUCTION WITH MOUNTING PLATES ON TAR PAPER / MEMBRANE



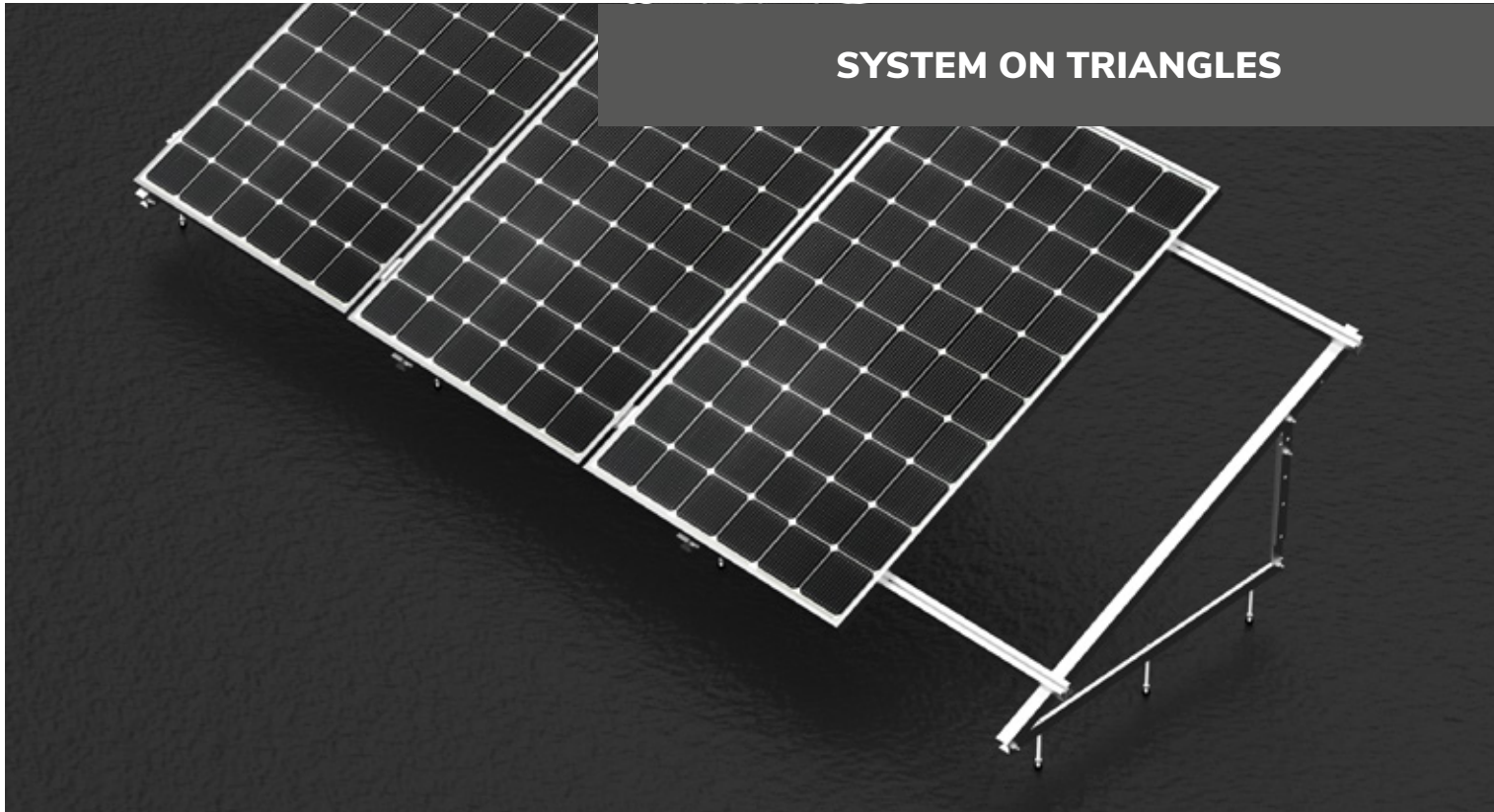
3. PRODUCTS

Material	Stainless steel / aluminium
Installaton method	Non-invasive mounting
Tilt angle	15-35°
Modules arrangement	Vertical
Product warranty	10 years
Notes	Min. roof edge distance for systems for pitched roofs is 1000 mm. To fulfill the requirements of the guarantee, installer must undergo a mounting plate assembly course at the plates manufacturer site.

4. MOUNTING SYSTEMS

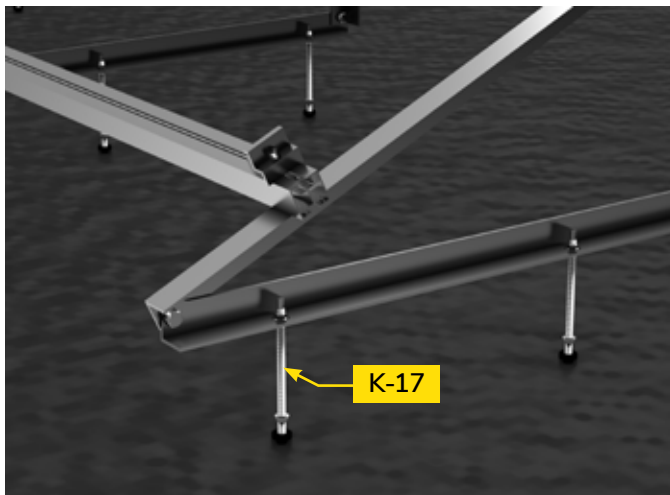


FOR FLAT ROOFS

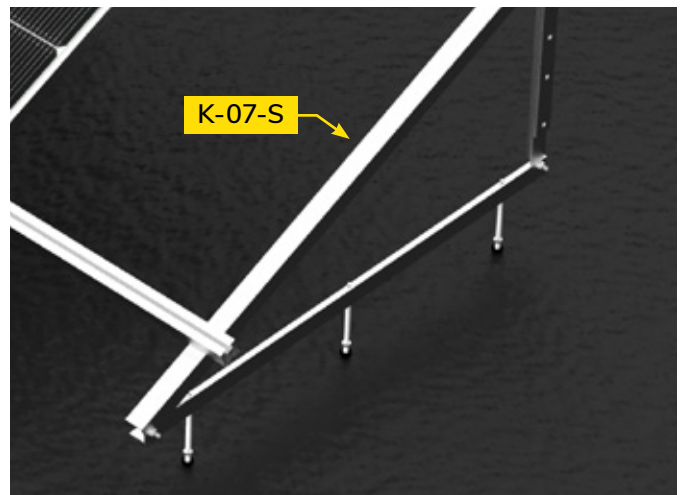


Material	Aluminium
Installation method	Mounting to the roof structure
Tilt angle	15-35°
Modules arrangement	Vertical
Product warranty	10 years
Notes	Min. roof edge distance for systems for pitched roofs is 1000 mm.

3. PRODUCTS



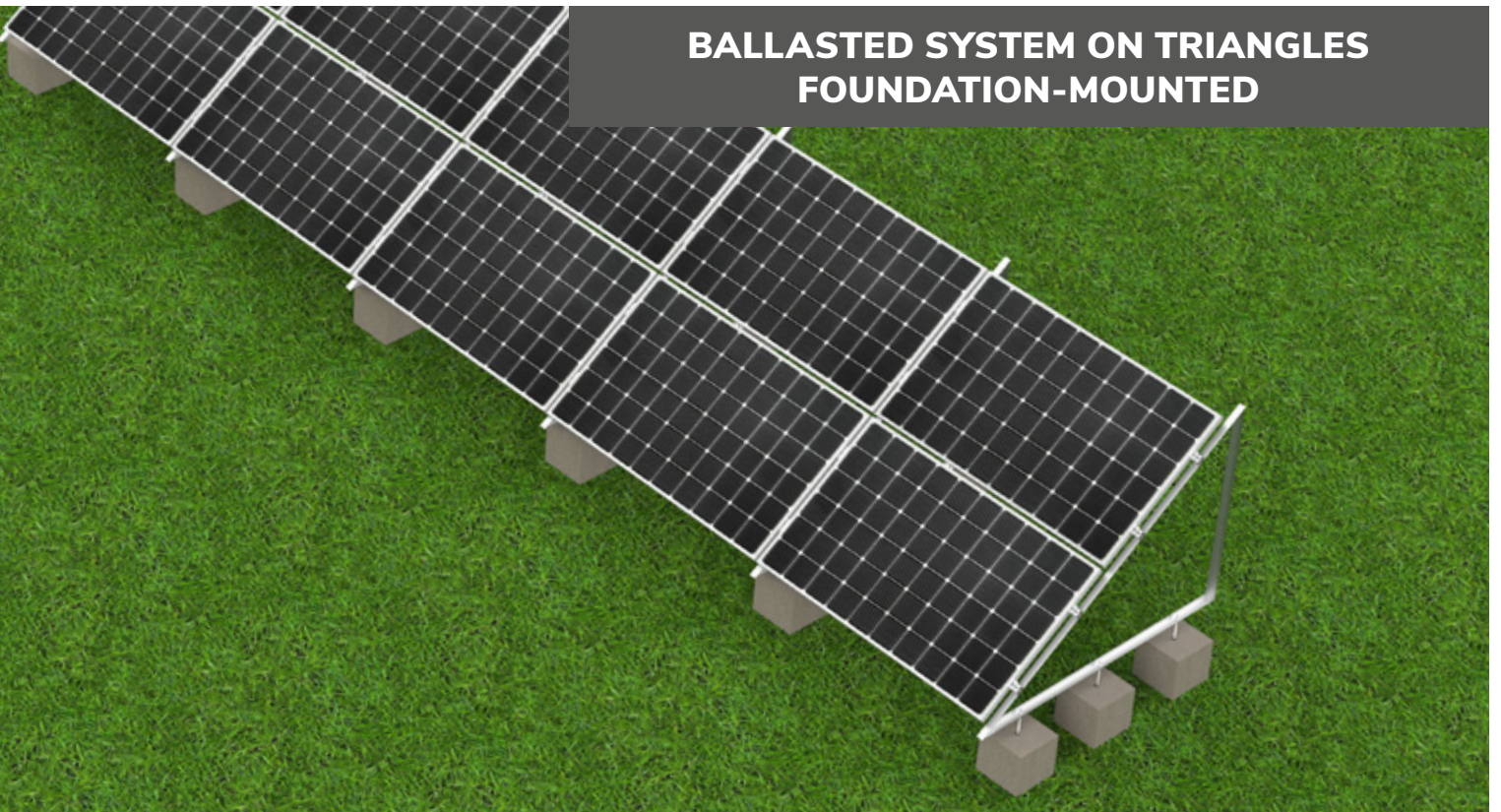
K-17



K-07-S

4. MOUNTING SYSTEMS

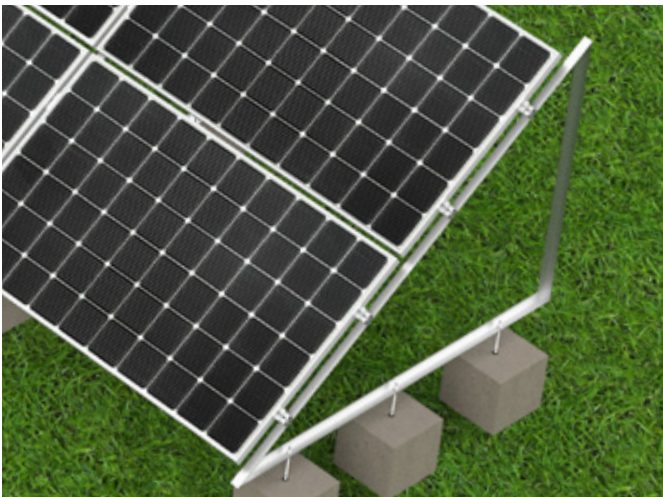
**BALLASTED SYSTEM ON TRIANGLES
FOUNDATION-MOUNTED**



3. PRODUCTS

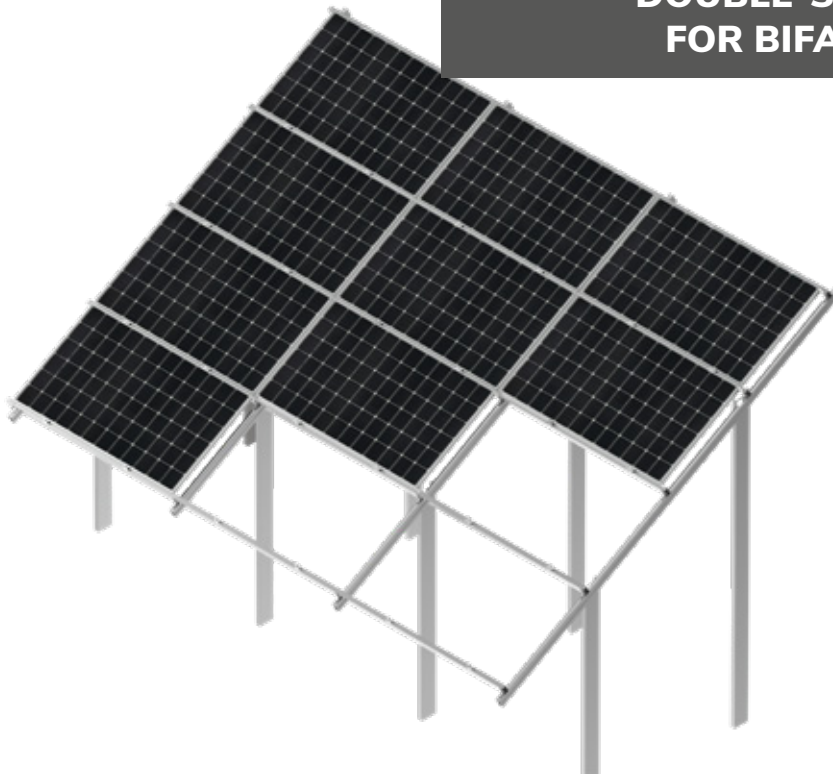
Material	Aluminium
Installation method	Mounting on the foundation
Tilt angle	36°
Modules arrangement	1 vertical row 2 horizontal rows
Product warranty	10 years
Notes	Solar modules and parts of free-standing systems may extend max 500 mm beyond the last support.

4. MOUNTING SYSTEMS

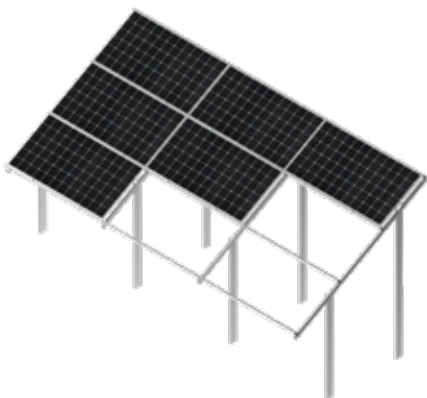


FREE-STANDING

DOUBLE-SUPPORT SYSTEM FOR BIFACIAL MODULES



Material	Stainless steel / aluminium
Installation method	Pile driver / excavator
Tilt angle	20-30°
Modules arrangement	2 vertical rows 3 horizontal rows
Product warranty	10 years
Notes	Mounting the K-25 profile along the longer side of the module.



1. KENO

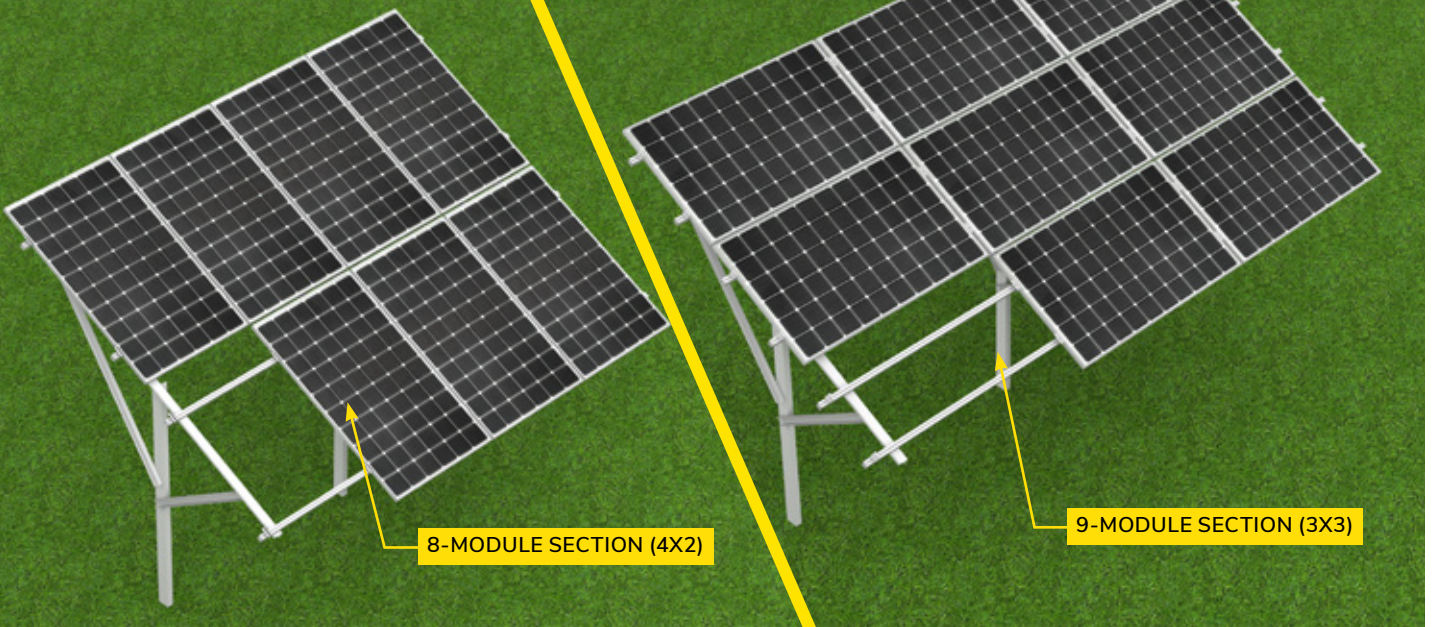
2. NORMS

3. PRODUCTS

4. MOUNTING SYSTEMS

SINGLE-SUPPORT SYSTEM

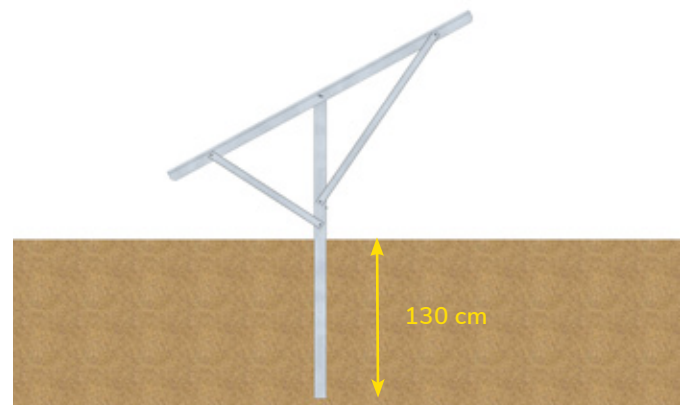
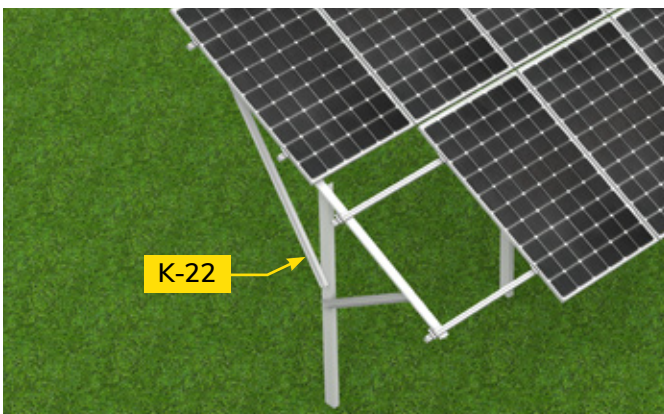
2 VERTICAL ROWS / 3 HORIZONTAL ROWS



3. PRODUCTS

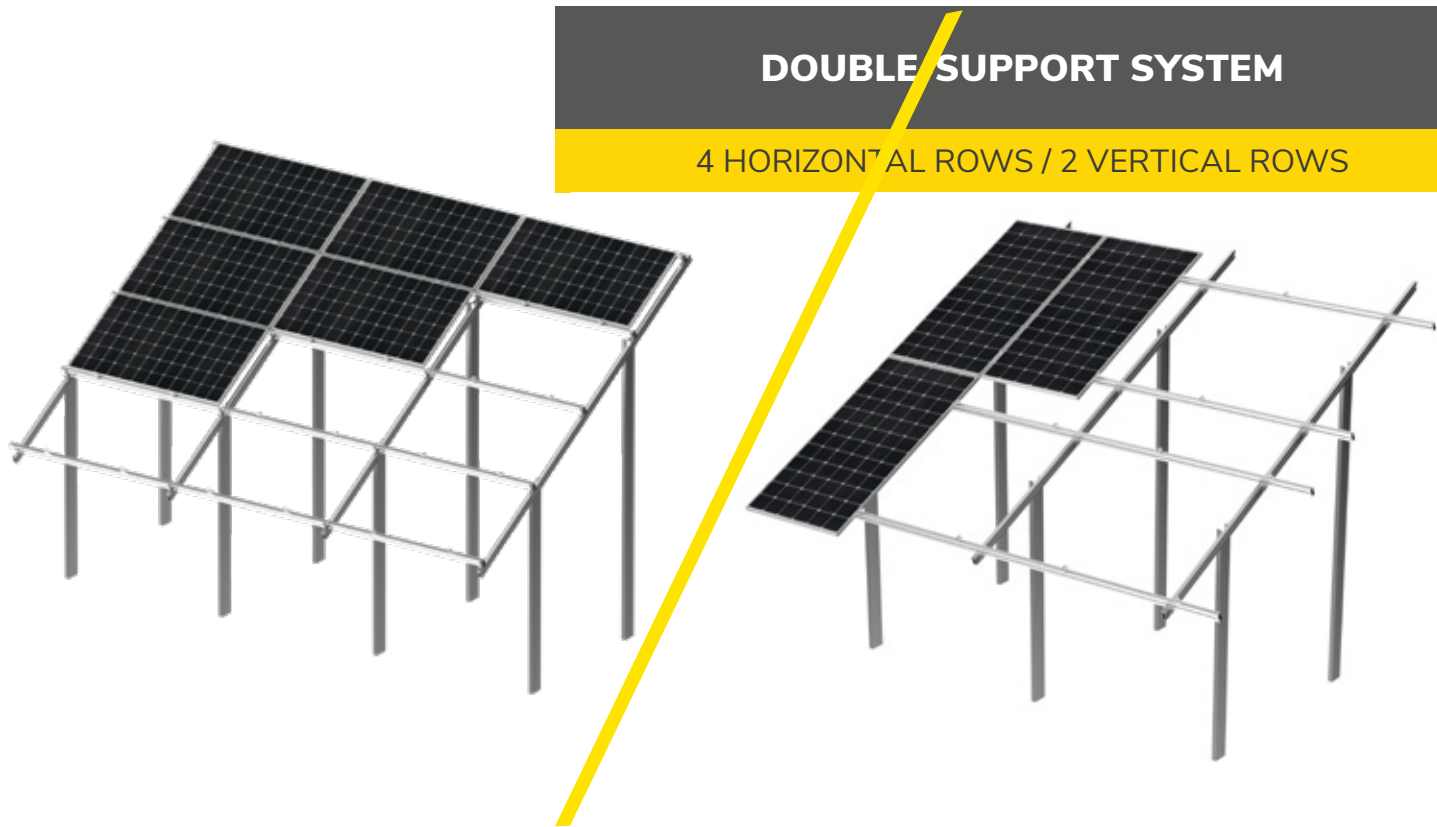
Material	Hot-dip galvanised steel / aluminium Steel with Magnelis® coating / aluminium
Installation method	Pile driver / excavator
Tilt angle	25-30°
Modules arrangement	2 vertical rows 3 horizontal rows
Product warranty	10 years
Notes	For two-arm systems with 2 vertical rows arrangement max solar module height is 1800 mm. For higher modules installation the double-support system should be used. Solar modules and parts of free-standing systems may extend max 500 mm beyond the last support. Insertion depths for single support systems is 1300 mm. Support dimensions are specified on the last page of the installation manual.

4. MOUNTING SYSTEMS

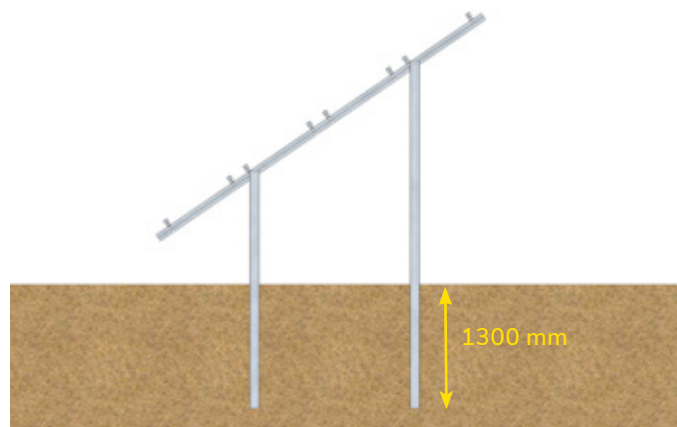
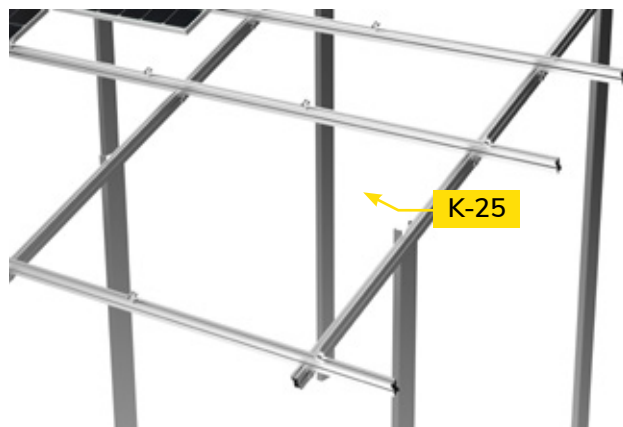


TOTAL WEIGHT OF MOUNTING STRUCTURE IS CALCULATED AT B2B PLATFORM AND SPECIFIED ON MODULE SELECTION BAR IN „MOUNTING SYSTEM” TAB”

FREE-STANDING



Material	Hot-dip galvanised steel / aluminium Steel with Magnelis® coating / aluminium
Installation method	Pile driver / excavator
Tilt angle	0-35° (regulated)
Modules arrangement	4 horizontal rows 2 vertical rows
Product warranty	10 years
Notes	Insertion depths for double support systems is 1300 mm. Solar modules and parts of free-standing systems may extend max 500 mm beyond the last support. For double-support systems the only possibility of elevating the front part of the system is to use two high supports. Support dimensions are specified on the last page of the installation manual.



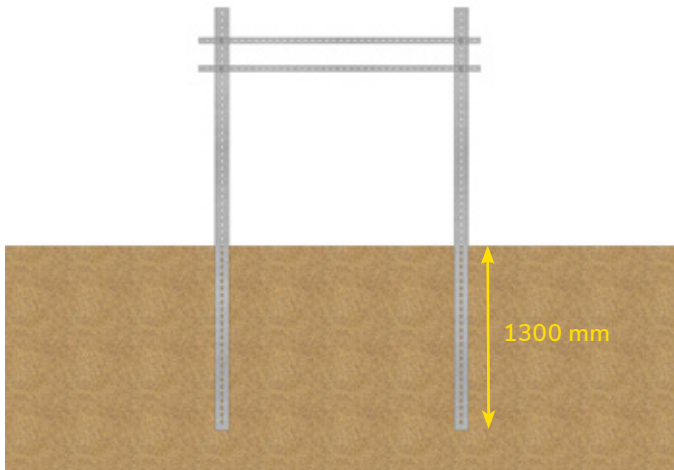
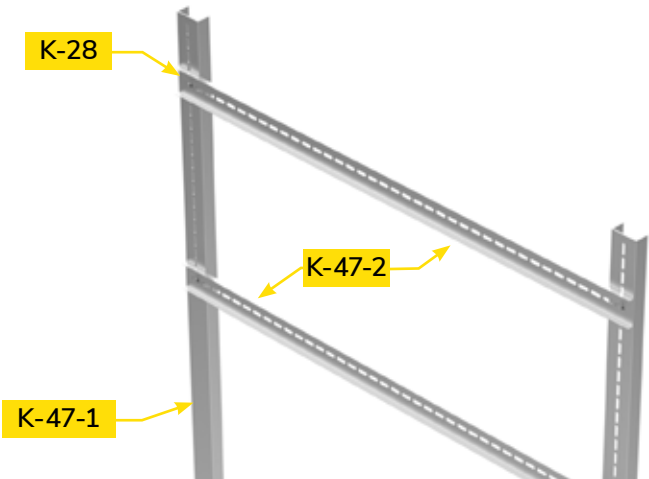
RACK FOR HANGING THE INVERTER



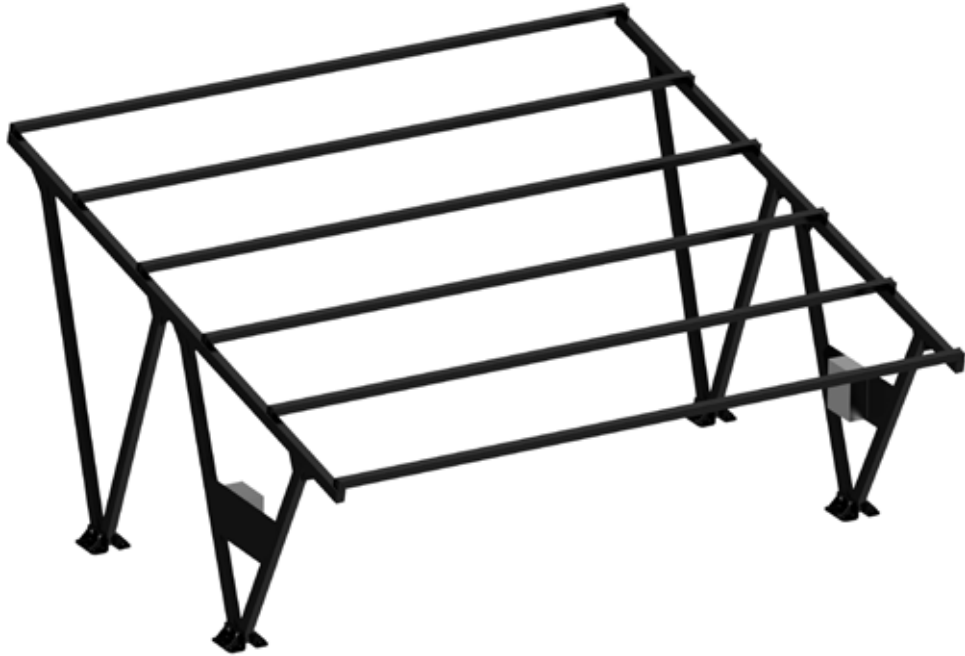
Material	Steel with Magnelis® coating
Installaton method	Pile driver / excavator
Product warranty	10 years
Notes	Insertion depth is 1300 mm.

3. PRODUCTS

4. MOUNTING SYSTEMS



CARPORT



Material	Steel with black powder coating
Installation method	Mounting on the foundation
Notes	Parking space provided for two vehicles.



TRAINING OFFER

PREPARATORY TRAINING COURSE FOR CERTIFIED RES INSTALLER EXAMINATION

We operate an Accredited Training Centre of the Office of Technical Inspection (Urząd Dozoru Technicznego, UDT) in the scope of Certified RES Installer training. By taking part in this training course, you will learn about the general topics related to photovoltaics and gain the basic theoretical knowledge concerning the operation of PV systems. You will learn how to size and connect PV systems to the power grid, and how to install and adjust them. Finally, you will also learn how to upgrade and maintain PV systems.

For organised groups of 15 or more people, we offer the option of organising a closed training course.

For more information, visit the website of the Office of Technical Inspection:

WWW.UDT.GOV.PL

WEBINARS

We hold regular remote training sessions (webinars) with manufacturers to keep our customers and employees up-to-date on current technologies and news from the PV market.

If you are interested in this form of education, we invite you to like and follow our social media profiles:



TRAINING COURSES FOR INSTALLER LICENSE RENEWAL

If you have already completed a Certified RES Installer training and obtained a license, keep in mind that this license is **valid for 5 years**. To prolong its validity, the Office of Technical Inspection requires participation in a training course for installer licence renewal, which can be taken at the KENO headquarters.

To renew your license, you have to:

- + Meet the conditions for certification specified in Art. 136 para. 3 of the Act on Renewable Energy Sources (Dz. U. [Journal of Laws] of 2015, item 478, as amended),
- + Complete refresher training within 12 months prior to the expiration date of the certificate,
- + Install, upgrade or maintain in proper working order at least 5 RES micro-installations, small installations or installations, with a total installed thermal capacity not exceeding 600 kW.

REMEMBER! The application for certificate renewal must be submitted **at least 30 days before the certificate expires!**

PRODUCT TRAINING

We organize certified product training courses, conducted by experts and representatives of manufacturers of photovoltaic systems found in our offer. They give you an opportunity to expand your knowledge and learn about the latest technology and solutions used in their equipment.

CERTIFIED MOUNTING PLATES ASSEMBLY COURSES

To fulfill the requirements of the guarantee, installer must undergo a mounting plate assembly course at the plates manufacturer site.

Training schedule & registration in TRAININGS tab at:

WWW.WYCENA.KENO-ENERGY.PL

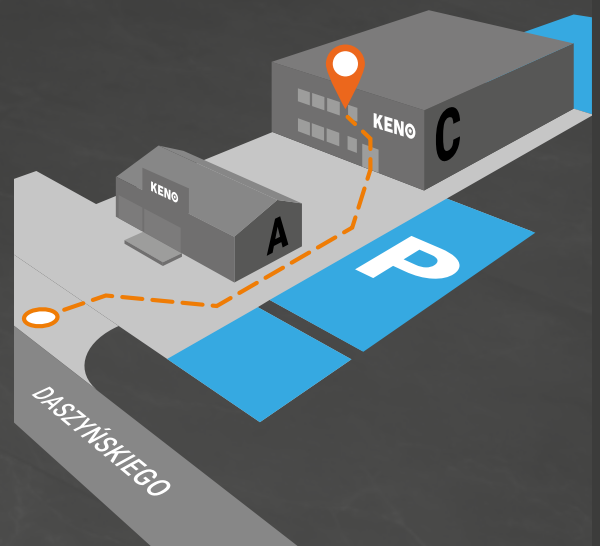


TRAINING SITE

Firma **KENO** is located in Gliwice (Ostropa district) at Daszyńskiego 609 Street, close to A4 motorway exit, 7 km from the city centre.

Training sessions take place in Building C, located directly behind the building at Daszyńskiego Street. The modern training room is located on the second floor.

Ample free parking is available for training course participants on company premises in front of and behind Building C. Electric car users can use a charger located near the entrance to the training building.

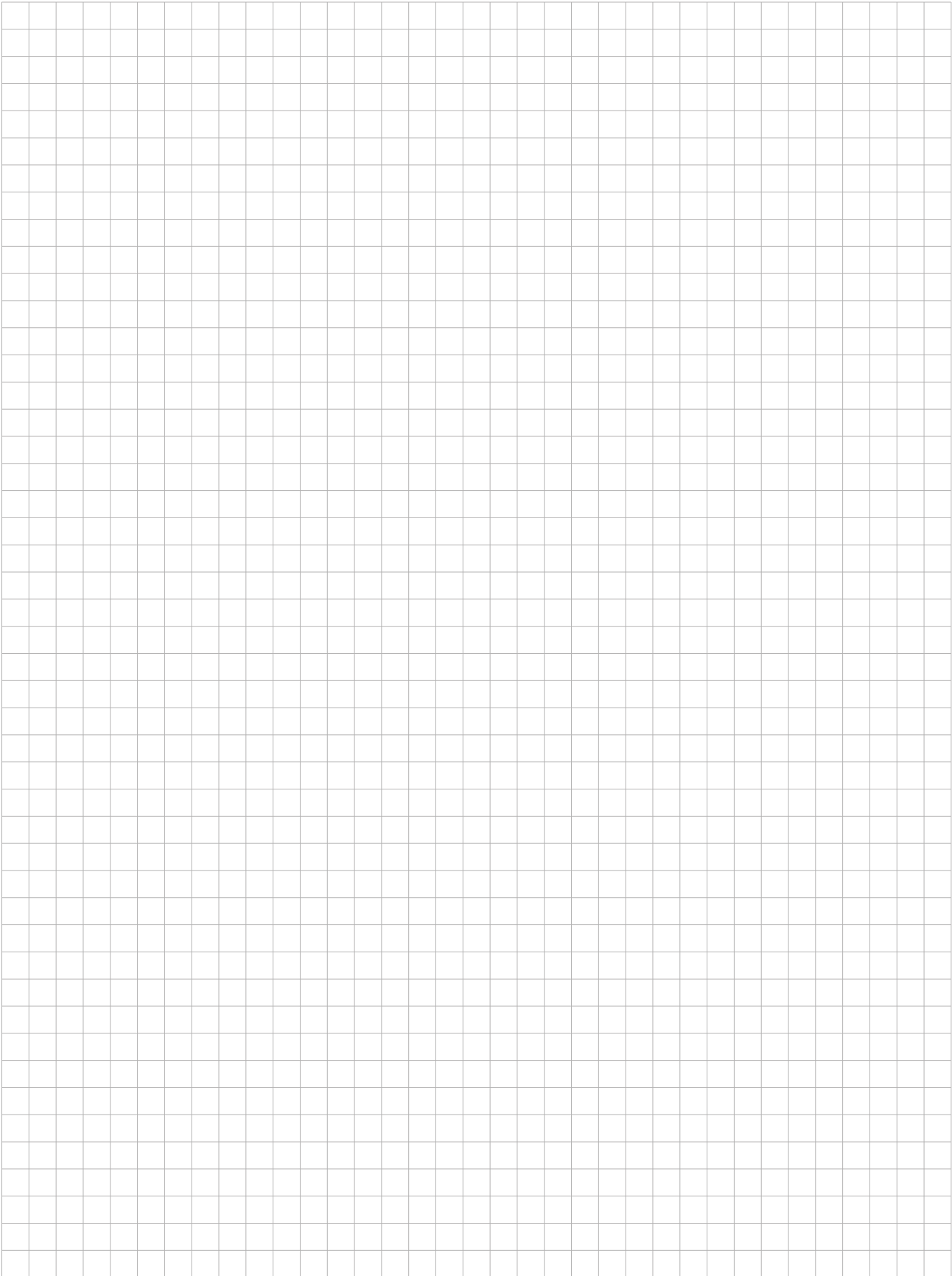


1. KENO

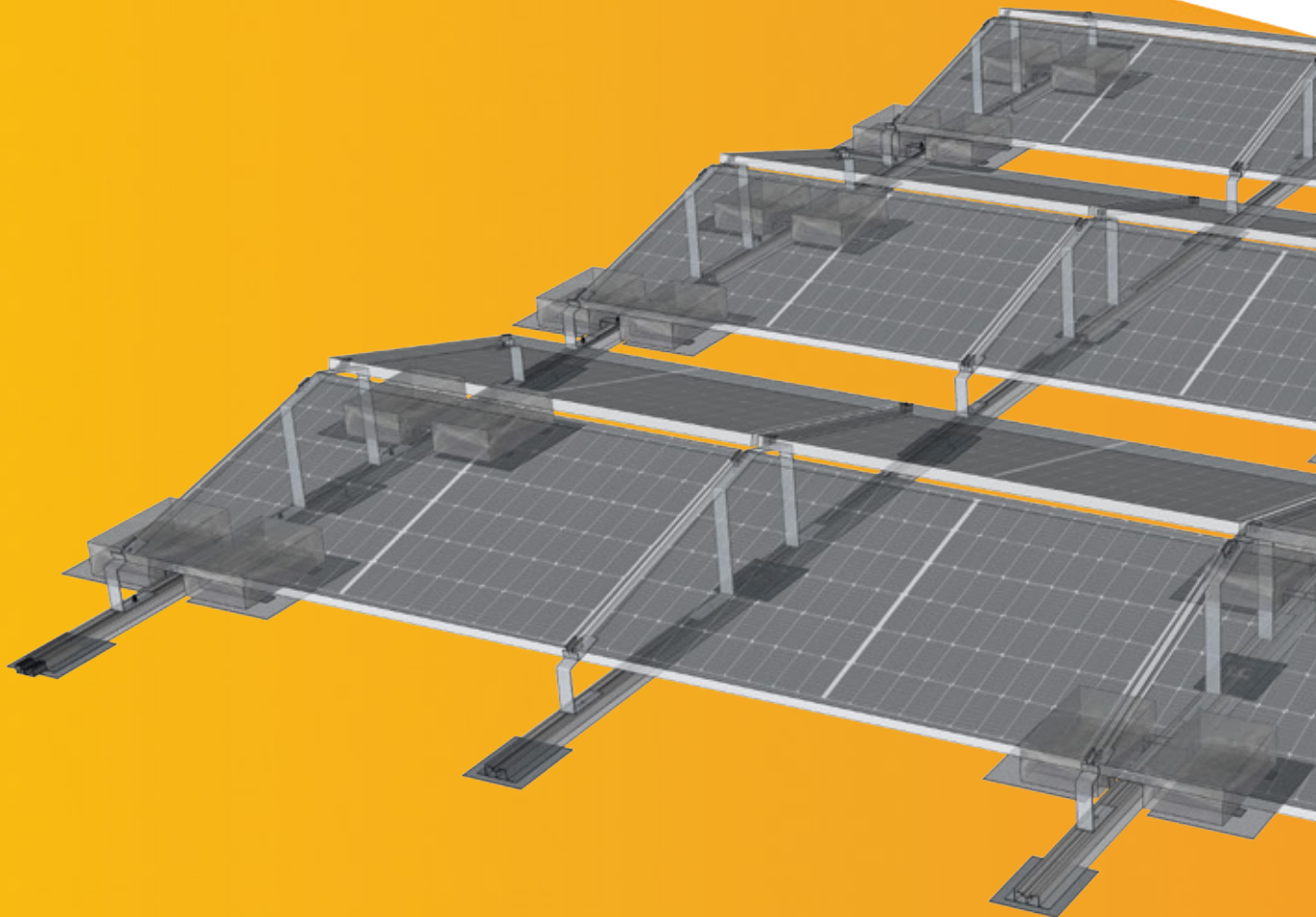
2. NORMS

3. PRODUCTS

4. MOUNTING SYSTEMS







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