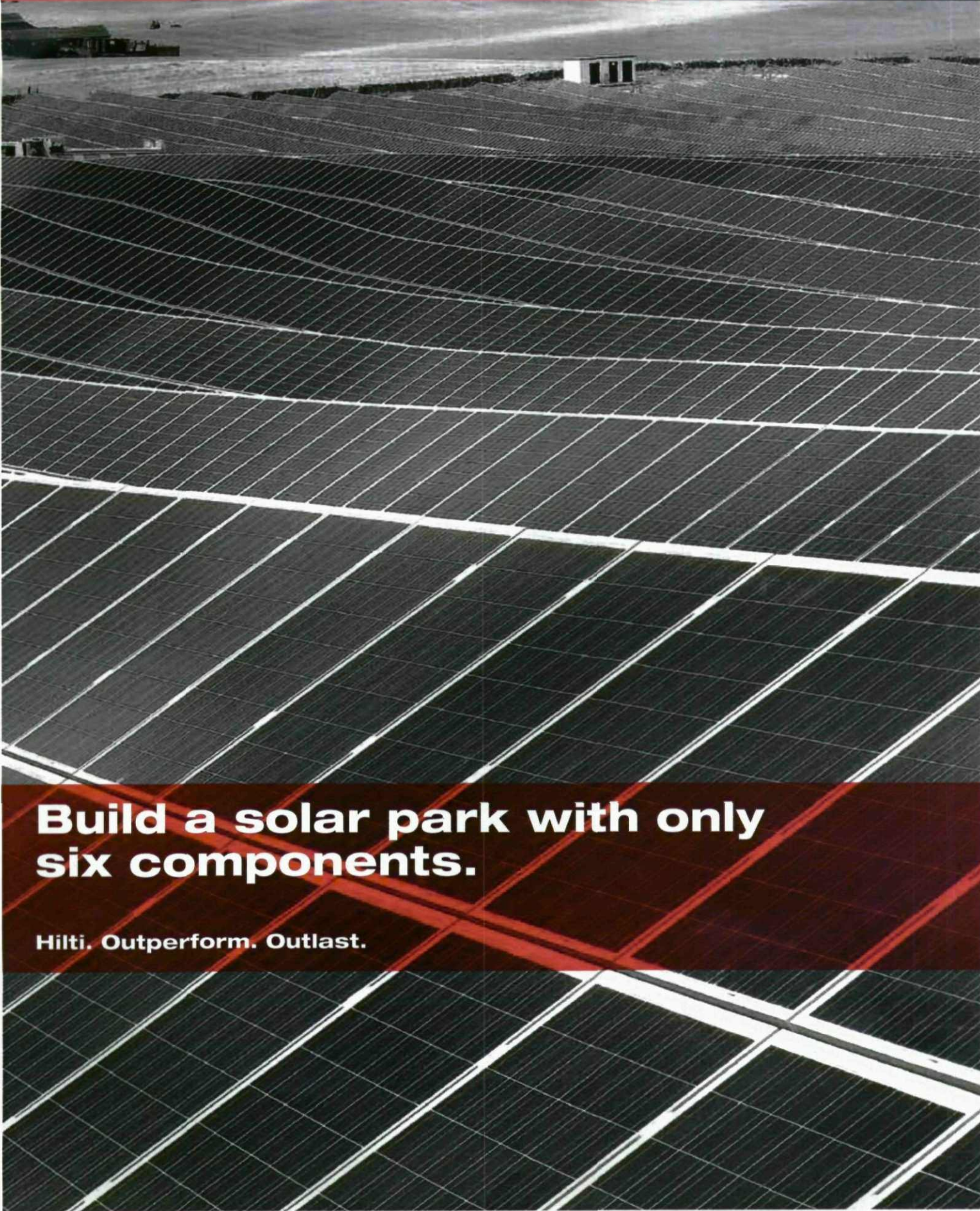


HILTI

Hilti MSP-AL photo-voltaic panel mounting system for solar parks



**Build a solar park with only
six components.**

Hilti. Outperform. Outlast.

We help you harness the power of the sun – with everything from Hilti.



Reliable assistance from experienced project managers who coordinate all logistical requirements and technical support.



Support from Hilti specialists at the planning stage and in the implementation of viable, correctly-sized and reliably-installed photovoltaic facilities, on-the-spot installation training and ongoing assistance in the form of working plans and materials lists.



No matter whether the need is for special packaging or materials sorted into lots to suit the job on hand, Hilti customers can rely on on-time delivery to construction sites worldwide – with everything exactly in line with their requirements.

Our comprehensive services help reduce the cost of photovoltaic systems and thus contribute towards competitively priced solar power. In addition to a range of high-grade system components for modular framing systems, Hilti also offers comprehensive logistical and technical support. We provide assistance in every phase of a project, helping to save time and avoid errors.

Solar projects with Hilti support structures (extract)

Escondido (US): pitched roof system, 0.05 MW
Masdar (UAE): pitched roof system, 0.19 MW
Crete (Greece): flat roof system, 0.16 MW
Masdar City (UAE): flat roof system, 0.7 MW
Chatellerault (France): flat roof system, 0.9 MW
Guangdong (China): flat roof system, 1 MW
Sardinia (Italy): flat roof system, 1 MW
Industrial roofs (France): flat roof system, 2 MW
Zaragoza (Spain): flat roof system, 2.4 MW
Blanta (Slovak Republic): solar park, 0.7 MW
Suklje (Slovenia): solar park, 0.8 MW
Lequile (Italy): solar park, 1 MW
Sault (France): solar park, 1.2 MW
Kamenice (Czech Republic): solar park, 1.22 MW
Argos (Greece): solar park, 1.85 MW
Wolfhagen (Kassel, Germany): solar park, 2 MW
Ponce (Puerto Rico): solar park, 2 MW
Binipark II (Mallorca, Spain): solar park, 3.2 MW
Sakvice (Czech Republic): solar park, 4.2 MW
Castellanetta (Italy): solar park, 6 MW
Gabardan (France): solar park, 8.8 MW
Elduayen (Merida, Spain): solar park, 11.3 MW
Busenwuth (Germany): solar park, 12 MW
El Carpio (Cordoba, Spain): solar park, 13.3 MW

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Hilti Corporation | 9494 Schaan | Liechtenstein | P +423-234 2111 | F +423-234 2965 | www.hilti.com/solar

Quick and efficient.

The Hilti MSP-AL solar park system brings considerable cost-efficiency advantages to the installation process. Preassembled connectors allow fast, efficient progress during assembly of the substructure. Thanks to use of high-grade parts with matched loadbearing characteristics, a durable, reliable, high-quality installation is guaranteed.

Longitudinal sleeve

Extension of the longitudinal channels using the sleeve and self-drilling screws ensures fast and durable connections.



Connectors

Pre-assembled connectors allow height and angle adjustments. Tight tolerances allow optimized load distribution.

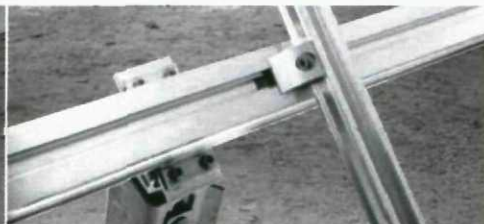


Fits your landscape.

The transversal setup allows to mount several rows of thin-film panels in landscape orientation to optimize cost and efficiency.



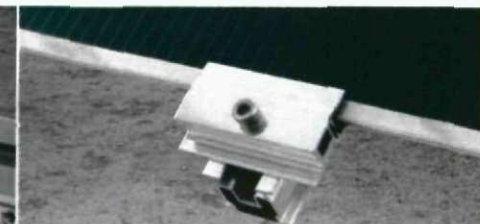
The LCC connector is adjustable in height and angle, helping to solve tricky installation situations.



Pre-assembled wing clamps installed from above for connecting carrier sections and longitudinal channels.



Carrier sections can be mounted even on connection points.



The pre-assembled thin film clamps can be mounted at the desired location from above. Just insert, turn and fasten.

HILTI

Hilti MSP-AL solar park.



The MSP-AL system has been specially developed by Hilti for the construction of ground-mounted support structures. It's particularly suitable for mounting framed panels quickly, with maximum productivity, in a portrait format setup. The ground connector can be used to fasten transversal channels directly to concrete foundations. User-friendly preassembled clamps and connectors help speed up the installation procedure.

Frame the sun.

Optimized mounting solution for framed photovoltaic panels in portrait orientation to optimize cost and efficiency.



Applications

- Fastening photovoltaic panels
- Construction of supporting structures for solar panels on concrete, ramming, earth anchors and cast-in foundations in solar parks

Advantages

- Easy to use, only 6 components required for the basic solar panel support structure
- Preassembled clamps and connectors for fast, user-friendly system installation
- Intuitive and quick to assemble
- Good adjustability for a wide range of structure angles and height differences to suit different topographic conditions

Highlights

- Designed for use with most types of photovoltaic panels
- Adaptable to different foundation types
- High corrosion protection (Aluminium and stainless steel parts)



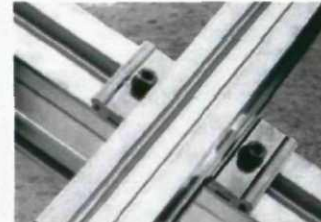
The system can be mounted on concrete, cast-in, rammed or with earth anchors.



The ground connector allows the transversal channel to be fastened directly to concrete.



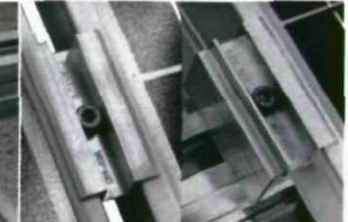
The connector allows quick and secure connection of the transversal channels to the support posts.



Pre-assembled cross connectors installed from above to connect transversal and longitudinal channels.



The longitudinal channel connections provide a continuous surface and allow panels to be mounted on the connection.



The pre-assembled panel clamps can be inserted in the channel from above and fastened at any desired position.

**Hilti MSP-AL photo-
voltaic panel mounting
system for solar parks**

Hilti MSP-AL solar park for thin film applications.



The Hilti solar park system is the ideal solution for mounting thin-film panels in 5-row landscape orientation. Thanks to use of adjustable connectors, this rugged and versatile system allows compensation for uneven ground. Preassembled parts ensure quick, cost-efficient installation.

MSP-HDG-RP ramming profile

Applications

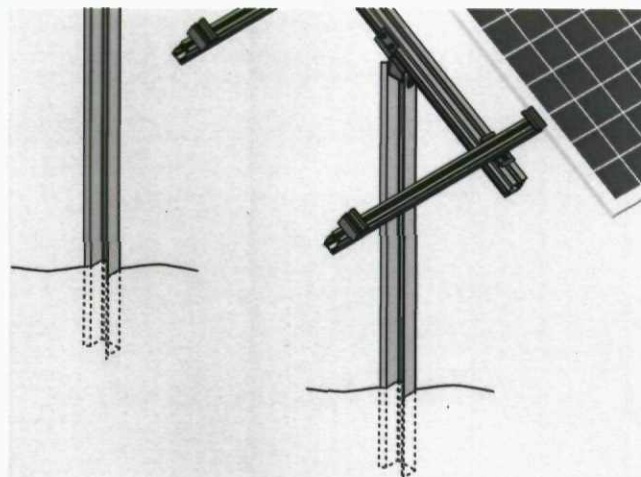
- Driven-pile foundations for ground-mounted panel support structures in solar parks

Advantages

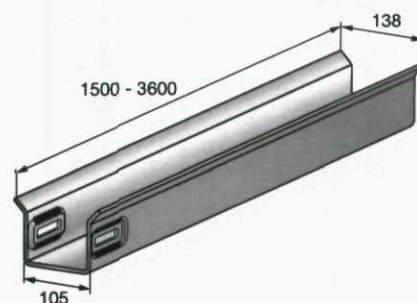
- Available in various lengths from 1500 to 3600mm
- Serrated surface at bolting points for positive engagement and higher loading capacity
- In hot-dip galvanized steel for optimum corrosion resistance
- Oblong holes for height adjustment

Technical data

Material:	S355 J2 steel
Thickness:	5 mm
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Weight per meter:	10.8 kg
Standard lengths available:	1500, 1800, 2100, 2400, 2700, 3000, 3300, 3600 mm
Height adjustment:	30 mm
Lead time for special lengths on request	



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-HDG-RP 1.5 m	Ramming profile	1	90	406801
MSP-HDG-RP 1.8 m	Ramming profile	1	80	406802
MSP-HDG-RP 2.1 m	Ramming profile	1	60	406803
MSP-HDG-RP 2.4 m	Ramming profile	1	60	406804
MSP-HDG-RP 2.7 m	Ramming profile	1	50	406805
MSP-HDG-RP 3.0 m	Ramming profile	1	40	406806
MSP-HDG-RP 3.3 m	Ramming profile	1	40	406807
MSP-HDG-RP 3.6 m	Ramming profile	1	40	406808



Ramming profile connecting parts

Applications

- Fastening connectors to ramming profiles

MSP-HDG M12x130 bolt with toothed head

Technical data

Material:	8.8 grade steel as per DIN EN ISO 898-1
Surface finish:	Hot-dip galvanized, min. coating 45 µm

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-HDG M12x130	Bolt with toothed head	50	150	408771



M12 HDG hex nut with flange

Technical data

Material:	8 grade steel as per DIN EN 20898-1
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Tightening torque:	84 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12 HDG	Hex nut with flange	100	400	408772

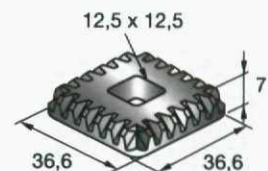


MSP-HDG-TP toothed plate

Technical data

Material:	ENG-GJMV-400-5 as per DIN EN 156
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Weight:	53 g

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-HDG-TP	Toothed plate	100	400	408774



MSP-AL-SP support post

Applications

- Panel support structures in solar parks on concrete foundations
- Support post between the base plate and transversal channel

Advantages

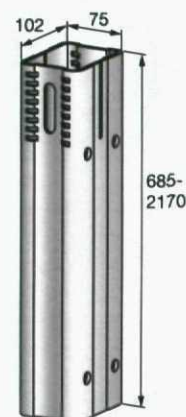
- Available in various lengths from 685 to 2170mm
- Serrated surface at bolting points for positive engagement and higher loading capacity
- Oblong holes for height adjustment

Technical data

Material:	Aluminium as per DIN EN AW-6005 T6
Thickness:	4 - 4.5 mm
Weight per meter:	3.7 kg
Standard lengths available:	685, 855, 1020, 1110, 1175, 1320, 1465, 1610, 1745, 1890, 2035, 2170 mm
Height adjustment:	40 mm
Lead time for special lengths on request	



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-SP 0.685 m	Support post	1	70	406809
MSP-AL-SP 0.855 m	Support post	1	70	406810
MSP-AL-SP 1.020 m	Support post	1	70	406811
MSP-AL-SP 1.110 m	Support post	1	70	406812
MSP-AL-SP 1.175 m	Support post	1	70	406813
MSP-AL-SP 1.320 m	Support post	1	70	406814
MSP-AL-SP 1.465 m	Support post	1	70	406815
MSP-AL-SP 1.610 m	Support post	1	70	406816
MSP-AL-SP 1.745 m	Support post	1	70	406817
MSP-AL-SP 1.890 m	Support post	1	70	406818
MSP-AL-SP 2.035 m	Support post	1	70	406819
MSP-AL-SP 2.170 m	Support post	1	70	406820



MSP-AL-BP base plate

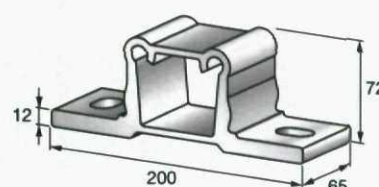
Applications

- Panel support structures in solar parks on concrete foundations
- Fastening support posts to concrete

Technical data

Material:	Aluminium as per DIN EN AW-6005 T6
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Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-BP M12	Base plate	32	32	409922
MSP-AL-BP M16	Base plate	32	32	412781



MSP-AL-BPI insulating plate

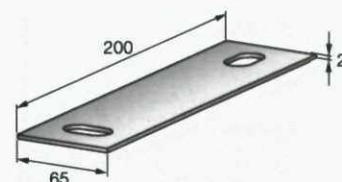
Applications

- Prevention of contact corrosion on the base plate

Technical data

Material:	EPDM rubber
Hardness:	70 Shore A ± 5

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-BPI	Insulating plate	100	800	406799



Support post connecting parts

Applications

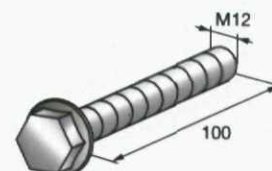
- Fastening support posts to base plates

M12x100 A2 hex bolt with flange

Technical data

Material:	A2-70 stainless steel as per DIN EN ISO 3506-1
Tightening torque:	50 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12x100 A2	Hex bolt with flange	50	150	406846



M12 A4 hex nut with flange

Technical data

Material:	A4-70 stainless steel as per DIN EN ISO 3506-2
Tightening torque:	50 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12 A4	Hex nut with flange	100	400	408770



Applications

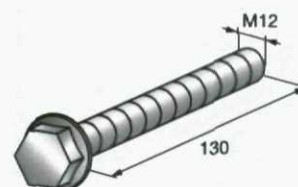
- Fastening top connectors to support posts

M12x130 A2 hex bolt with flange

Technical data

Material:	A2-70 stainless steel as per DIN EN ISO 3506-1
Tightening torque:	50 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12x130 A2	Hex bolt with flange	50	150	408769



M12 A4 hex nut with flange

Technical data

Material:	A4-70 stainless steel as per DIN EN ISO 3506-2
Tightening torque:	50 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12 A4	Hex nut with flange	100	400	408770

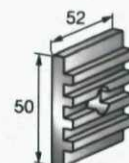


MSP-AL-TP toothed plate

Technical data

Material:	Aluminium as per DIN EN AW-6005 T6
Weight:	50 g

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-TP	Toothed plate	100	500	408773



MSP-AL-SC support channel

Applications

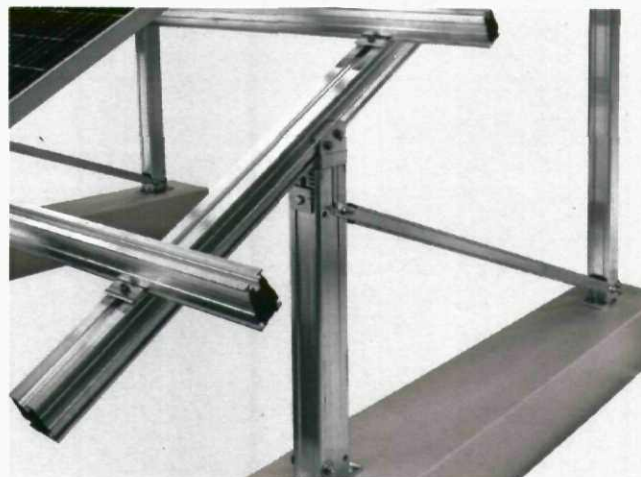
- Panel support structures in solar parks on concrete foundations
- Diagonal brace between front and rear support posts

Advantages

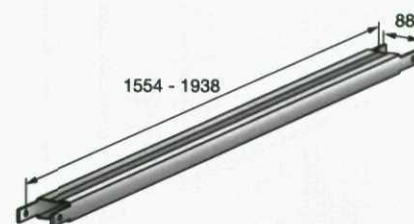
- Only one bolt required at each support post
- Available in various lengths from 1555 to 1940 mm

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66 (F25)
Weight per meter:	1.9 kg
Standard lengths available:	1555, 1635, 1750, 1765, 1820, 1940 mm
Lead time for special lengths on request	



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-SC 1.555 m	Support channel	1	162	406822
MSP-AL-SC 1.635 m	Support channel	1	162	406823
MSP-AL-SC 1.750 m	Support channel	1	162	410390
MSP-AL-SC 1.765 m	Support channel	1	162	406824
MSP-AL-SC 1.820 m	Support channel	1	162	406825
MSP-AL-SC 1.940 m	Support channel	1	162	406826



Support channel connecting parts

Applications

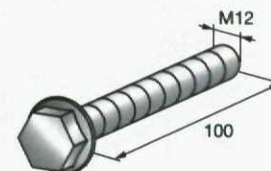
- Fastening the support channel (diagonal brace) between front and rear support posts

M12x100 A2 hex bolt with flange

Technical data

Material:	A2-70 stainless steel as per DIN EN ISO 3506-1
Tightening torque:	50 Nm rear / 25 Nm front
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12x100 A2	Hex bolt with flange	50	150	406846



M12 A4 hex nut with flange

Technical data

Material:	A4-70 stainless steel as per DIN EN ISO 3506-2
Tightening torque:	50 Nm rear / 25 Nm front
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12 A4	Hex nut with flange	100	400	408770



MSP-AL-LC longitudinal channel

Applications

- Installation of ground-mounted solar park structures
- Horizontal support for mounting photovoltaic panels

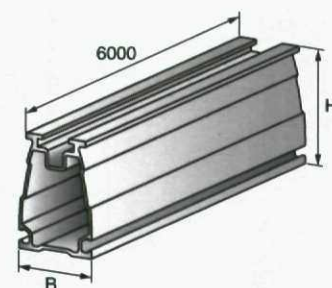
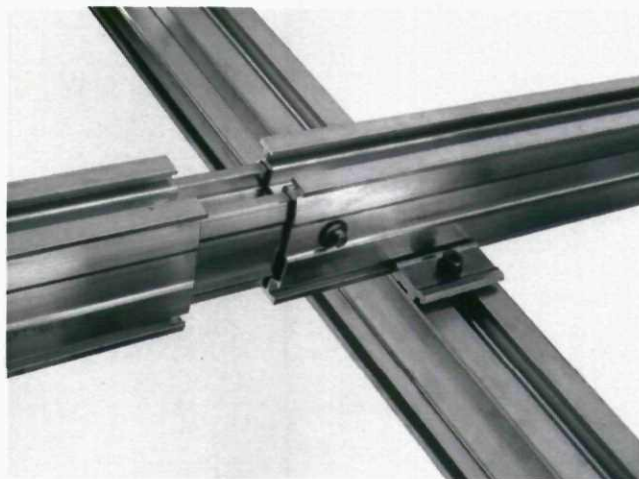
Advantages

- Easy to assemble – all connectors, bolts and nuts accessible from above
- Channel dimensions match all system components exactly
- Middle and end clamps can be fitted in one quick, easy operation

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
Standard lengths available:	6000 mm
Lead time for special lengths on request	

Ordering designation	Description	Height (mm)	Width (mm)	Weight per meter (kg)	Package contents	Export package contents	Item no.
MSP-AL-LC 80 6.0m	Longitudinal channel	80	56	2.1	1	50	406821
MSP-AL-LC 88 6.0m	Longitudinal channel	88	62	2.3	1	65	412782
MSP-AL-LC 100 6.0m	Longitudinal channel	100	70	2.5	1	48	412783
MSP-AL-LC 105 6.0m	Longitudinal channel	105	73	2.7	1	44	410392



MSP-AL-LS sleeve

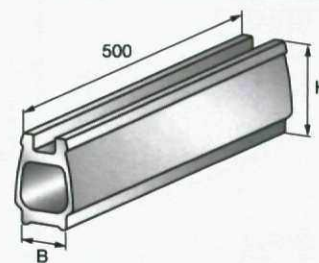
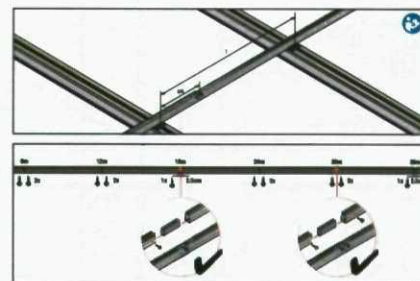
Applications

- Connecting longitudinal channels in solar panel support structures
- Optimum loading capacity when placed at the quarter points of the panel length*

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
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Ordering designation	Description	Height (mm)	Width (mm)	Package contents	Export package contents	Item no.
MSP-AL-LS 80 0.5m	Sleeve	65	35	18	18	429337
MSP-AL-LS 88 0.5m	Sleeve	73	41	14	14	429338
MSP-AL-LS 100 0.5m	Sleeve	85	49	16	16	429339
MSP-AL-LS 105 0.5m	Sleeve	98	50	14	14	429340



*Please observe our detailed installation instructions.

S-MD 03 S self-drilling screw

stainless steel

Application

- Securing the push-in sleeve connector in the longitudinal channel

Technical data

Material:	Stainless steel
Screw point:	No. 3, self-drilling
Drive type:	8mm Hex
Screw head:	Hex

Ordering designation	Description	Screw head dia.	Fastenable thickness max. (mm)	Drilling thickness (mm)	Package contents	Export package contents	Item no.
S-MD 03 S 5.5x25	Self-drilling screw	8	11	2.1 - 5.5	500	1500	285610



MSP-AL-TC transversal channel

Applications

- Installation of ground-mounted solar park structures
- Inclined support for mounting photovoltaic panels

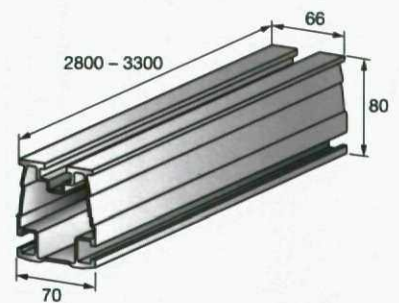
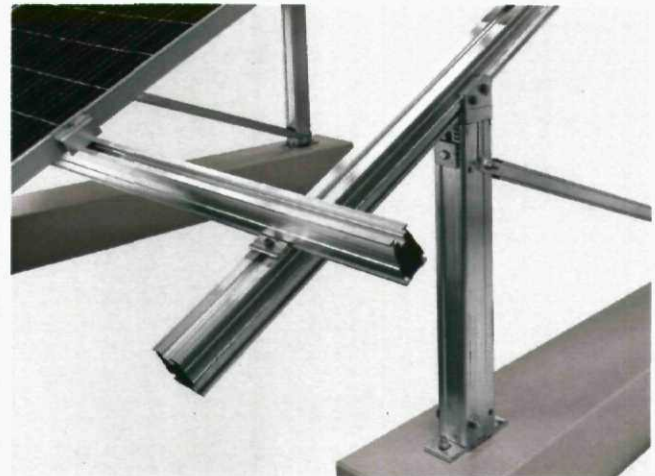
Advantages

- Channel dimensions match system components exactly
- Available in three standard lengths

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
Weight per meter:	2.65 kg
Standard lengths available:	2800, 3000, 3300 mm
Lead time for special lengths on request	

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-TC 2.8 m	Transversal channel	1	40	406827
MSP-AL-TC 3.0 m	Transversal channel	1	40	406828
MSP-AL-TC 3.3 m	Transversal channel	1	40	414513



MSP-AL-XC cross connector

Applications

- Connecting longitudinal and transversal channels

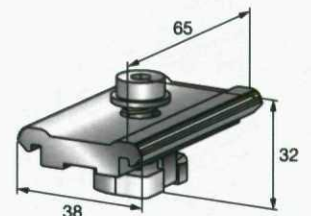
Advantages

- Pre-assembled, no additional parts required
- Easy to fit into the transversal channel – insert, turn and slide into position
- Quick and secure – simply hook over the edge of the longitudinal channel and tighten to the specified torque

Technical data

Material:	Aluminium as per DIN EN AW-6082 T6
Screw diameter:	M8
Screw length:	25 mm
Tightening torque:	20 Nm
Wrench size:	Hex socket 6 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-XC	Cross connector	100	400	406798



MSP-AL-GC ground connector

Applications

- Installation of ground-mounted solar park structures on concrete foundations
- Fitting longitudinal channels close to the foundation

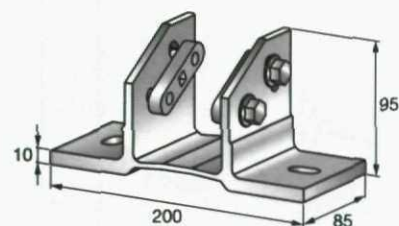
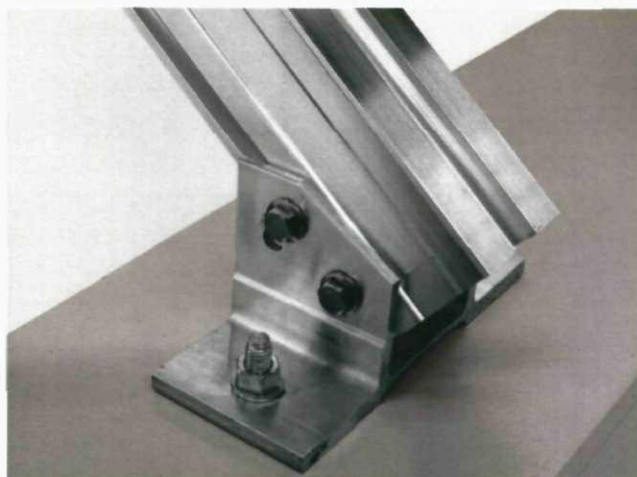
Advantages

- Two oblong holes provide easy adjustment for positioning with anchors or bolts
- Easy to fit to the transversal channel – simply slide the clamping plates into the side slots and pre-tighten one screw

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
Screw diameter:	M10
Screw length:	20 mm
Tightening torque:	30 Nm
Wrench size:	15 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL GC	Ground connector	40	40	406795



MSP-AL-GCI insulating plate

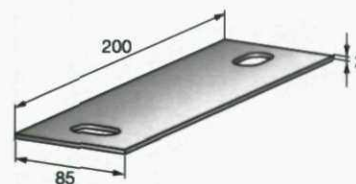
Applications

- Prevention of contact corrosion on the ground connector

Technical data

Material:	EPDM rubber
Hardness:	70 Shore A ± 5

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-GCI	Insulating plate	100	600	406800



MSP-AL BC "basic" connector

Applications

- Mounting the transversal channel on the support post

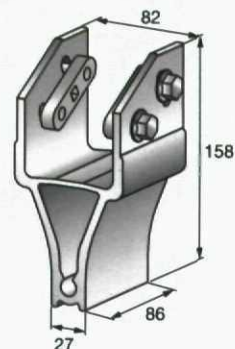
Advantages

- Pre-assembled, no additional parts required
- Easy to fit to the transversal channel – simply slide the clamping plates into the side slots and pre-tighten one screw
- Allows height adjustment

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
Tightening torque:	30 Nm
Wrench size:	15 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL BC	"Basic" connector	32	32	406797



MSP-AL-CC "comfort" connector

Applications

- Mounting the transversal channel on the support post

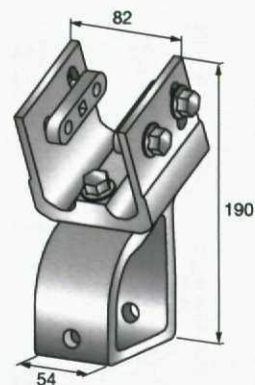
Advantages

- Pre-assembled, no additional parts required
- Easy to fit to the transversal channel – simply slide the clamping plates into the side slots and pre-tighten one screw
- Allows height and angle adjustment

Technical data

Material:	Aluminium as per DIN EN AW-6063 T66
Tightening torque:	30 Nm
Wrench size:	15 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL CC	"Comfort" connector	24	24	406796



MSP-HDG-CI cast-in profile

Applications

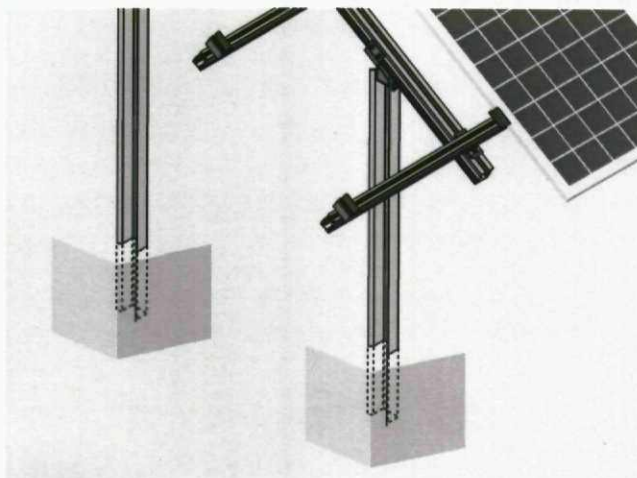
- Installation of ground-mounted solar park structures on cast-in profiles in concrete foundations

Advantages

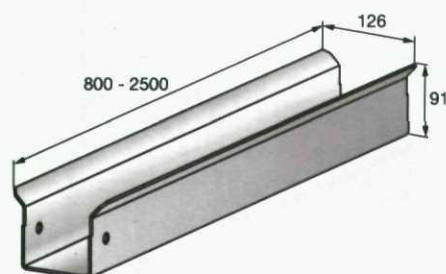
- Available in various lengths from 800 to 2500mm
- In hot-dip galvanized steel for optimum corrosion resistance

Technical data

Material:	S355 J2 steel
Thickness:	3 mm
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Weight per meter:	6.5 kg
Standard lengths available:	800, 1200, 1500, 1800, 2200, 2500 mm
Lead time for special lengths on request	



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-HDG-CI 0.8 m	Cast-in profile	1	50	413470
MSP-HDG-CI 1.2 m	Cast-in profile	1	50	413471
MSP-HDG-CI 1.5 m	Cast-in profile	1	50	413472
MSP-HDG-CI 1.8 m	Cast-in profile	1	50	413473
MSP-HDG-CI 2.2 m	Cast-in profile	1	50	413474
MSP-HDG-CI 2.5 m	Cast-in profile	1	50	413475



Cast-in profile connecting parts

Applications

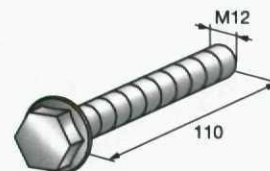
- Fastening connectors to cast-in profiles

M12x110 HDG hex bolt with flange

Technical data

Material:	8.8 grade steel as per DIN EN ISO 898-1
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Tightening torque:	84 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12x110 HDG	Hex bolt with flange	50	150	412785



M12 HDG hex nut with flange

Technical data

Material:	8 grade steel as per DIN EN 20898-1
Surface finish:	Hot-dip galvanized, min. coating 45 µm
Tightening torque:	84 Nm
Wrench size:	19 mm

Ordering designation	Description	Package contents	Export package contents	Item no.
M12 HDG	Hex nut with flange	100	400	408772



MSP-AL-CH 8 solar cable holder

Applications

- Fixing cables on longitudinal channels MSP-AL-LC

Technical data

Conduit cable diameter:	5 - 8 mm
Tankage cable at 6 mm dia.:	2
Tankage cable at 8 mm dia.:	2
For use with:	MSP-AL-LC



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-CH 8	Cable holder	100	1500	418916

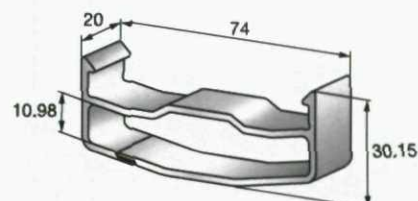
MSP-AL-BCH 8 bunched-cable holder

Applications

- Fixing cables on transversal channel MSP-AL-TC

Technical data

Conduit cable diameter:	3 - 8 mm
Tankage cable at 6 mm dia.:	20
Tankage cable at 8 mm dia.:	10
For use with:	MSP-AL-TC



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-BCH 8	Bunched cable holder	50	400	418917

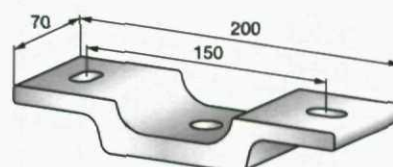
MSP-AL-EAA 16 Earth Anchor Adaptor

Applications

- Connecting base plate and ground connector on the earth anchors

Technical data

Material:	EN AW-6005 T6 as per DIN 6930-m
Center screw size:	M16
Side screw size:	M12



Ordering designation	Description	Package contents	Export package contents	Item no.
MSP-AL-EAA 16	Earth Anchor Adapter	40	40	425970

**R&D
technology
adaptation**

Reduction of carrier recombination loss
- preserving as much of the generated electricity as possible
- realizing even higher voltage

Use resources effectively

- by cutting the wafer almost round the HD cell produces less material waste
- compact module size but high power generation

**HD
cell
design**

**Anti-
reflection
glass**

Reduction of optical loss
- enabling as much incoming sunlight as possible to reach the electrical generating layer (crystalline silicon)
- retrieving even higher current

18.0%*
180 W/m²



* For H250

HIT cell technology

The HIT (Heterojunction with Intrinsic Thin layer) solar cell is made of a thin monocrystalline silicon wafer surrounded by ultra-thin amorphous silicon layers. This product provides the industry's leading performance and value using state-of-the-art manufacturing techniques. The development of the HIT solar cell was supported in part by the New Energy and Industrial Technology Development Organization (NEDO).

Quality

Panasonic is truly committed to quality since it began developing and manufacturing solar PV modules in 1975. Our long track record is supported with our claim-rate of only 0.00214 % or 62 product-guarantee cases out of 2,885,689 solar modules produced in our European factory in Dorog, Hungary (as of Nov. 2011) with 0 cases of output guarantee and 0 guarantee-related legal challenges.

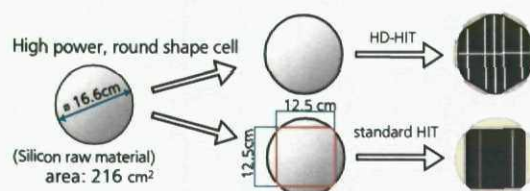
Special features

HIT solar modules are 100% emission free, have no moving parts and produce no noise. The dimensions of the HIT modules enable a space saving installation and the achievement of maximum output power possible on a given roof area.

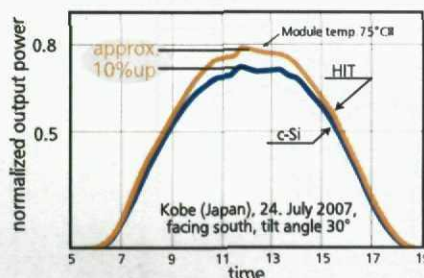
High performance at high temperatures

Even at high temperatures, the HIT solar cell can maintain higher efficiency than a conventional crystalline silicon solar cell.

HIT[®] HD solar cell



Changes in generated power daytime



The HIT cell and module have very high conversion efficiency in mass production.

Model	Cell Efficiency	Module Efficiency	Output/m ²
H250	20.8%	18.0%	180 W/m ²
H245	20.4%	17.7%	177 W/m ²

HIT[®]
Photovoltaic Module

HIT is a registered trademark of SANYO Electric Co., Ltd. The name "HIT" comes from "Heterojunction with intrinsic Thin-layer" which is an original technology of SANYO Electric Co., Ltd.

Electrical data (at STC)

	VBHH250AE01	VBHH245AE01
Maximum Power (P _{max}) [W]	250	245
Max. power voltage (V _{mp}) [V]	34.9	34.4
Max. power current (I _{mp}) [A]	7.18	7.14
Open circuit voltage (V _{oc}) [V]	43.1	42.7
Short circuit current (I _{sc}) [A]	7.74	7.73
Maximum over current rating [A]	15	
Output power tolerance [%]	+10/-5*	
Maximum system voltage [V]	1000	

Note: Standard Test Conditions: Air mass 1.5, Irradiance = 1000W/m², cell temperature = 25°C
 * All modules measured by SANYO facility have output with positive tolerance

Temperature characteristics

Temperature (NOCT) [°C]	46.0	46.0
Temp. coefficient of P _{max} [%/°C]	-0.30	-0.30
Temp. coefficient of V _{oc} [V/°C]	-0.108	-0.107
Temp. coefficient of I _{sc} [mA/°C]	2.32	2.32

At NOCT

Maximum power (P _{max}) [W]	188.9	185.4
Max. power voltage (V _{mp}) [V]	32.8	32.4
Max. power current (I _{mp}) [A]	5.76	5.73
Open circuit voltage (V _{oc}) [V]	40.5	40.1
Short circuit current (I _{sc}) [A]	6.23	6.23

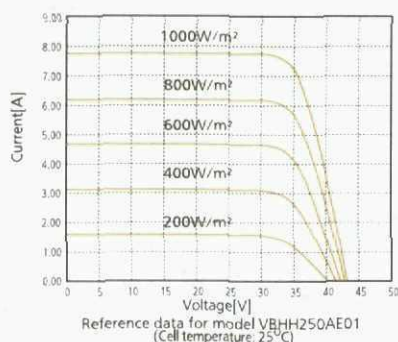
Note: Nominal Operating Cell Temperature: Air mass 1.5 spectrum, Irradiance = 800W/m², Air temperature = 20°C, wind speed 1 m/s

At low irradiance

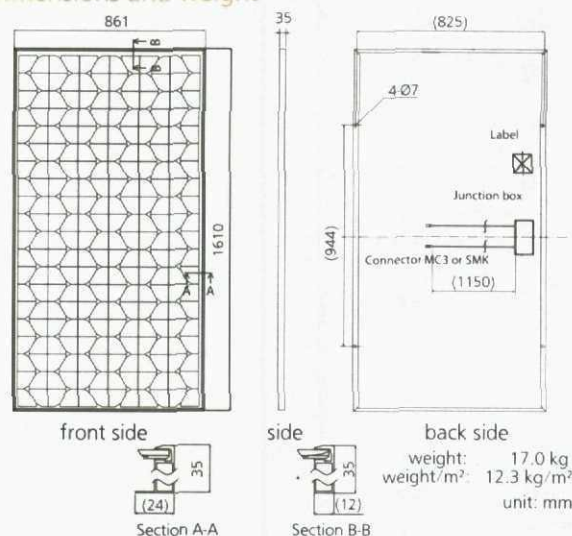
Maximum power (P _{max}) [W]	48.8	47.7
Max. power voltage (V _{mp}) [V]	34.1	33.6
Max. power current (I _{mp}) [A]	1.43	1.43
Open circuit voltage (V _{oc}) [V]	40.1	39.7
Short circuit current (I _{sc}) [A]	1.55	1.55

Note: Low irradiance: Air mass 1.5 spectrum, Irradiance = 200W/m², cell temp. 25°C

Dependence on irradiance



Dimensions and weight



Guarantee

Power output: 10 years (90% of P_{min}) 25 years (80% of P_{min})
 Product workmanship: 10 years
 (Based on guarantee documents)

Materials

Cell material: Honeycomb Design HIT cells
 Glass material: AR coated tempered glass
 Frame materials: Black anodized aluminium
 Connector type: MC3 or SMK

Certificates



Member of



Please consult your local dealer for more information.

CAUTION! Please read the installation manual carefully before using the products.

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 Panasonic Group

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Panasonic

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 02/2012