

# Photovoltaic main catalog

**Solarline | Connectors for renewable energy**

EN



## STÄUBLI ELECTRICAL CONNECTORS

## Long-term solutions – Expert connections



**Stäubli Electrical Connectors is a leading international manufacturer of high-quality electrical contacts and connector systems and solutions for industrial applications. We are part of the Stäubli mechatronics group, the technology leader in connection solutions, robotics and textile machinery.**

Stäubli develops, produces, sells and services products for markets with the highest productivity and safety standards. As recognized specialists, our focus is always on solutions and customers. Many new developments got their start here and are now becoming established as worldwide standards.

Our customers depend on our expertise and our active support, even when dealing with unusual challenges. With Stäubli, you're entering into a long-term partnership built on reliability, dedication, and exceptional quality in both products and services.

#### **Pioneering contact technology for increased efficiency**

The entire Stäubli Electrical Connectors product range meets market expectations for high performance, the highest number of mating cycles, and long-lasting reliability for safe, durable operation. Our proven **MULTILAM technology** is ideal for all types of connections in industrial applications. Customers in the **power transmission and**

**distribution** sector rely on our consistent, loss-free transmission performance in all voltage ranges. The **automotive industry** depends on our high-efficiency connections for spot-welding applications in production lines. Harsh conditions in the **transportation sector** require high vibration resistance, maximum reliability, and compact design. These attributes are vitally important for railway and e-mobility applications. The safety

and reliability of our products are essential for **test and measurement technology.**

In the growing field of **alternative energy**, our products have been setting standards since the 1990s. About half of the solar energy generated worldwide is transmitted through safe, long-lasting, high-performance Stäubli connectors.

# Applications and benefits



**Offering a wide range of connection systems and accessories for photovoltaics, plug connectors, junction boxes and cables, we have been connecting any type of PV installation for more than 25 years. As a pioneer and global market leader for PV connectors, Stäubli has been setting the industry benchmark since the introduction of the original MC4 connector. The Original Stäubli MC4 connectors connected by mid-2021 more than 400 GW, which comes up to around 50 % of the cumulated PV capacity worldwide.**

Thanks to the tried and tested MULTILAM advanced contact technology, our connectors keep your PV installation up and running efficiently and safely.

These apparently minor components can have a massive impact. Outstanding reliability and consistently low contact resistance guarantee:

- Low service cost and reduced downtime
- Elimination of risks for hotspots and fire
- Low power losses

Stäubli PV connectors guarantee proper operation over their whole lifetime (>25 years). By minimizing risk and maximizing the return in the long term, our components influence LCOE positively and have a decisive impact on the bankability of photovoltaic projects.



<https://www.staubli.com/en/electrical-connectors/alternative-energies/>

# Content

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# Safety note

Plug connectors not manufactured by Stäubli are sometimes described by their manufacturers as being “Stäubli compatible” due to their ability to mate with Stäubli connectors. This, however, is not true: by doing so, they do not conform to the requirements for a safe electrical connection with long-term stability. For that reason, we accept no liability if these non-approved connectors are mated with Stäubli original connectors.

**Stäubli has not recognized any products from third-party suppliers as being plug-compatible with the MC4 family and does not intend to do so in the future.** Using unsuitable components or combining plugs from different manufacturers poses significant risks (high failure rates, fire, etc.)

and is not permitted under any circumstances. Please note that all certifications are voided when such a plug combination is used.

Statements made by TÜV and UL confirm this: TÜV Rheinland LGA Products GmbH, based in Cologne, stresses that compatibility can be confirmed “only for products of the same type family from the same manufacturer” and that the current certificate for the MC4 connector family is based “on positive results of tests on products with corresponding mating parts of the MC4 family.” As there is uncertainty in the case of warranty claims involving combined PV connector pairs from different manufacturers, “the PV installation inspectors are obliged to criticize the use of such combinations.” It

is also stated in UL file QIJJ2.E343181 that only “connectors within a product family are approved by UL.” UL clearly distances itself from declaring compatibility of components from different manufacturers due to uncertainty over long-term behavior.



# General information

## Colour code

For those items available in various colours, replace the asterisk “\*” with the appropriate colour code.

21	black	22	red
23	blue	29	white

## Changes / Provisos

All data, illustrations and drawings in the catalogue have been carefully checked. They are in accordance with our experience to date, but no responsibility can be accepted for errors. We also reserve the right to make modifications for design and safety reasons. When designing equipment incorporating our components, it is therefore advisable not to rely solely on the data in the catalogue but to consult us to make sure this information is up to date. We shall be pleased to advise you.

## Copyright

The use of this catalogue for any other purpose, in whatever form, without our prior written consent is not permitted.

## RoHS ready

Directive 2011/65/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

## Symbols



**Accessories or special tools exist for this product**



**The assembly instruction MA000 is available for this product**



**Check out the interactive content for this product**

# UNLIMITED POSSIBILITIES FOR CONTACT SOLUTIONS

## MULTILAM Technology



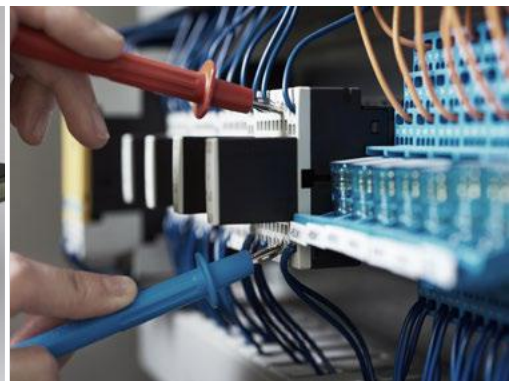
**MULTILAM** are specially formed and resilient contact elements. All Stäubli Electrical Connectors products benefit from the unique and outstanding performance of the **MULTILAM Technology**.

Thanks to their constant spring pressure, MULTILAM louvers ensure continuous contact with the contact surface, resulting in a constantly low contact resistance.

MULTILAM Technology allows to find solutions for connectors within the severest constraints and in certain products for up to 1 million mating cycles.

This makes the MULTILAM Technology the best choice for applications with demanding requirements:

- Reliable and longlife operation due to constantly high performance
- Safe operation under highest environmental demands on temperature, vibration and shock
- Suitable for data and signal contacts as well as high-current connectors
- Automated solutions with a high number of mating cycles



## INTRODUCTION

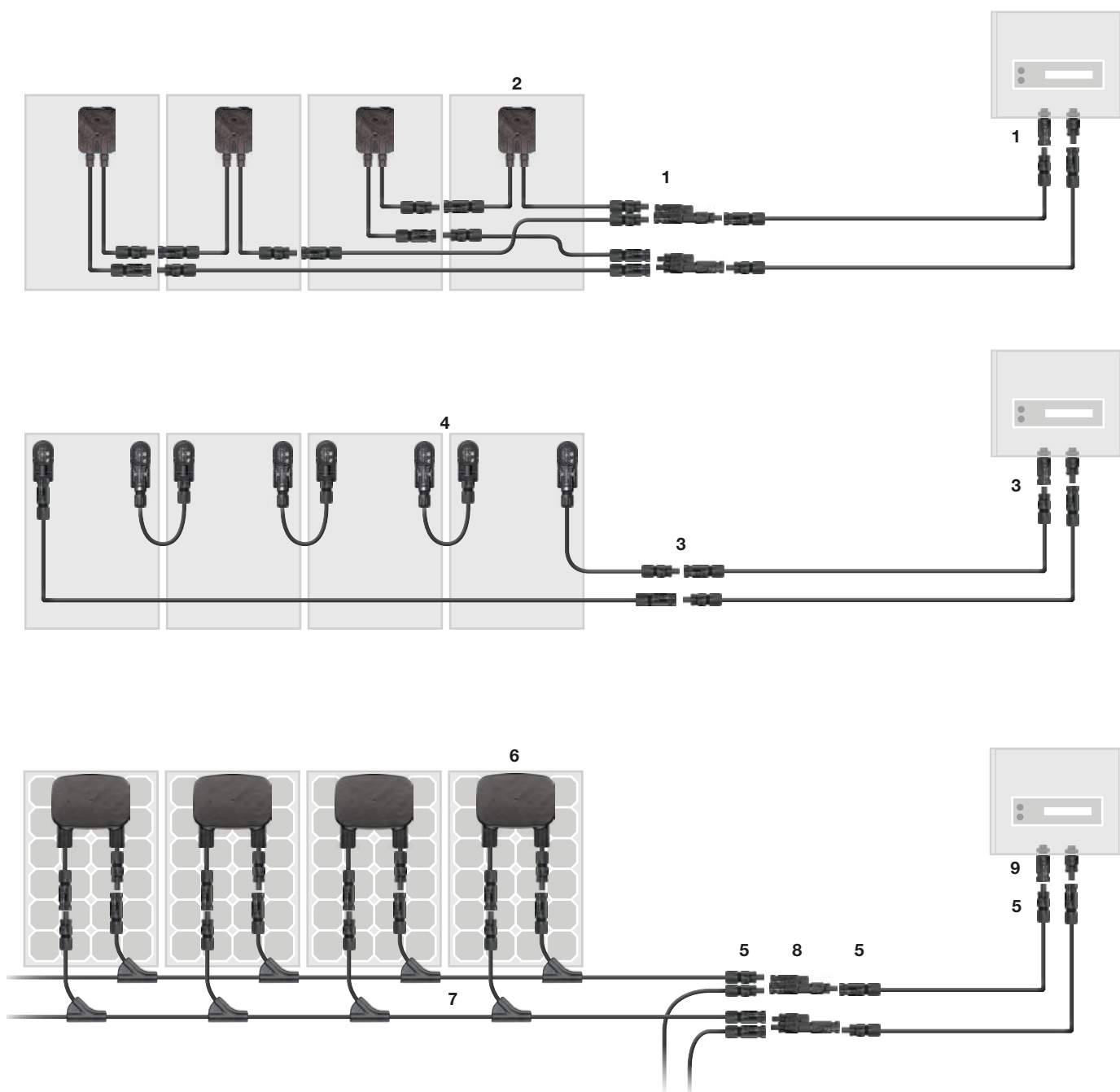
# Application possibilities of the Stäubli product portfolio

### Examples of a PV field installation

The upper example shows the MC4 plug connector system (1) and a customized, two-pole junction box (2).

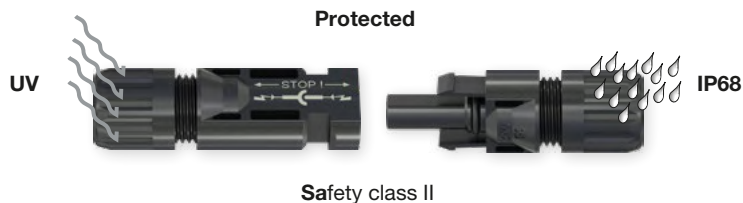
The illustration in the middle shows the MC4 plug connector system (3) and the single-pole PV-JB/TB (4).

At the bottom an example of a PV roof installation with MC4 plug connector system (5), junction box (6) branch cable (7), branch socket/plug (8) and MC4 panel receptacles (9).



**PLUG CONNECTORS**

# Advantages of the MC4 connector range



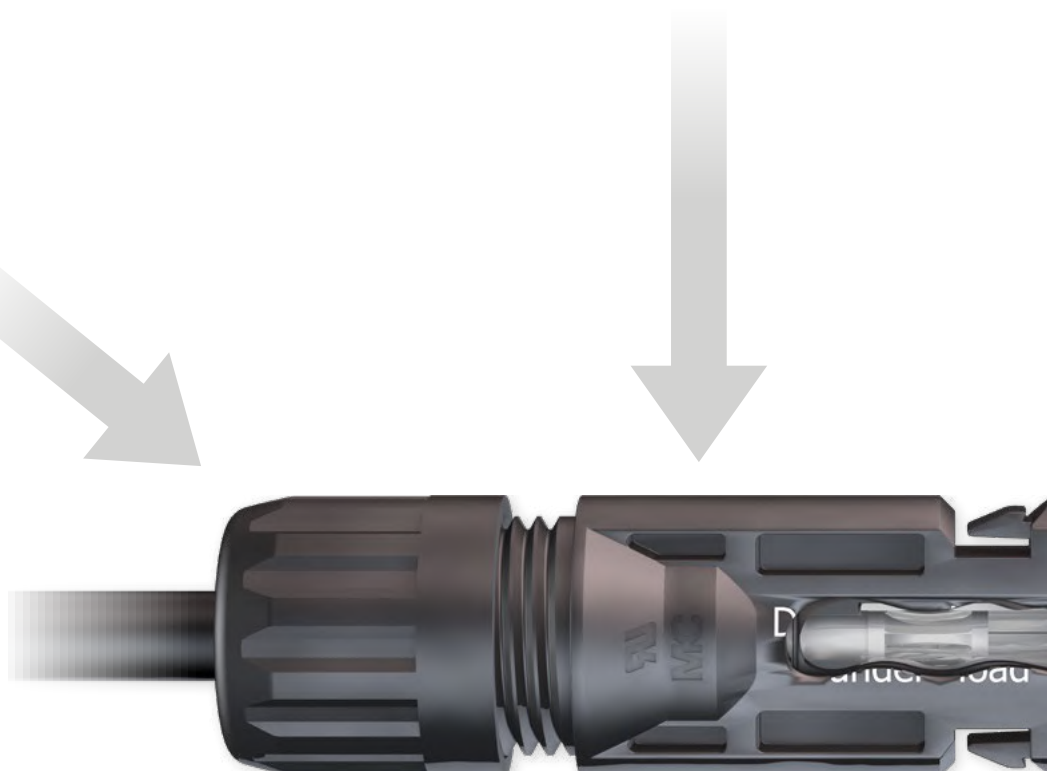
Proven MULTILAM technology with high long-term stability



More than 50 years of experience and core competence

Range of cable cross-sections

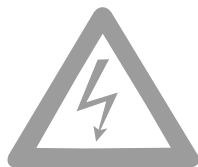
- |                     |   |   |        |
|---------------------|---|---|--------|
| 10 mm <sup>2</sup>  | ○ | ○ | 8 AWG  |
| 6 mm <sup>2</sup>   | ○ | ○ | 10 AWG |
| 4 mm <sup>2</sup>   | ○ | ○ | 12 AWG |
| 2.5 mm <sup>2</sup> | ○ | ○ | 14 AWG |



Locking system



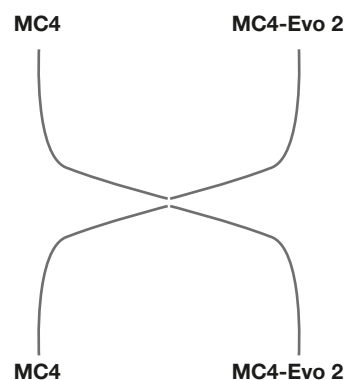




**Voltage level**

TÜV 1000 V / 1500 V  
UL 1500 V

**Compatibility**



**Certificates**



These products are certified by TÜV Rheinland LGA GmbH



cTÜVus



UL recognized



EAC



CSA



JET



CQC

**Safety locking device**

NEC 2020

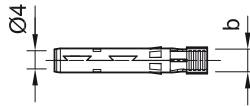
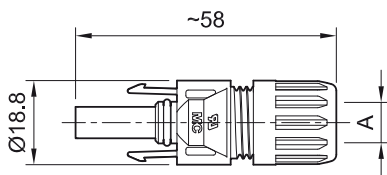


## PLUG CONNECTORS

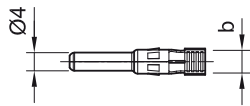
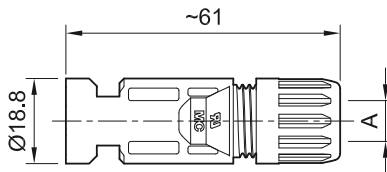
# Female and male cable coupler MC4

Female and male cable coupler as individual part with open crimp contact (including insulating part)

### PV-KBT4...



### PV-KST4...



Assembly instructions MA231

[www.staubli.com/electrical](http://www.staubli.com/electrical)



Sealing caps page 49

Assembly tools page 54

In accordance with NEC 2020, requires a tool to open. Proven MULTILAM technology with high long-term stability, which ensures consistently low performance loss throughout the entire service life of the plug connector. Tried and tested plug connectors,

over 15 years of experience in the field. Available for assembly with cross-sections up to 10 mm<sup>2</sup>. Also available as ready made leads. Mating compatibility with MC4 and MC4-Evo 2 connector families. Leads made to customer's specifications.

<b>Technical data</b>	
Connector system	MC4
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	105 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PC/PA
Locking system	Locking Type
Fire protection class	UL94:V-0
Ammonia resistance (acc. to DLG)	yes
Salt mist spray test, degree of severity 6	yes
TÜV Rheinland certifications number	R 60127190
TÜV Rheinland 2 PfG 2330	R 60087448
UL-File number	E343181
CSA number of certificate	250725
CQC number of certificate	CQC16024138286
JET number of certificate	B19T0013

# Female and male cable coupler MC4

Female and male cable coupler as individual part with open crimp contact (including insulating part)

Order No.	Type	Socket	Plug	Outer diameter of cable		IEC 62852			UL 6703			Approvals				
				A (mm)	b (mm)	mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR	CSA	CQC	JET
32.0010P0001-UR	PV-KBT4/2,5I-UR	x		5.0-6.0	4.0	2.5	1000	22.5				x	x	x		x
									14	1500	30					
32.0011P0001-UR	PV-KST4/2,5I-UR		x	5.0-6.0	4.0	2.5	1000	22.5				x	x	x		x
									14	1500	30					
32.0140P0001-UR	PV-KBT4/2,5X-UR	x		5.5-7.4	4.0	2.5	1000	22.5				x	x			x
									14	1500	30					
32.0141P0001-UR	PV-KST4/2,5X-UR		x	5.5-7.4	4.0	2.5	1000	22.5				x	x			x
									14	1500	30					
32.0012P0001-UR	PV-KBT4/2,5II-UR	x		5.9-8.8	4.0	2.5	1000	22.5				x	x	x	x	x
									14	1500	30					
32.0013P0001-UR	PV-KST4/2,5II-UR		x	5.9-8.8	4.0	2.5	1000	22.5				x	x	x	x	x
									14	1500	30					
32.0014P0001-UR	PV-KBT4/6I-UR	x		5.0-6.0	5.8	4	1000	39				x	x	x		x
						6	1000	39								
									12	1500	35					
									10	1500	50					
32.0015P0001-UR	PV-KST4/6I-UR		x	5.0-6.0	5.8	4	1000	39				x	x	x		x
						6	1000	39								
									12	1500	35					
									10	1500	50					
32.0142P0001-UR	PV-KBT4/6X-UR	x		5.5-7.4	5.8	4	1000	39				x	x			x
						6	1000	39								
									12	1500	35					
									10	1500	50					
32.0143P0001-UR	PV-KST4/6X-UR		x	5.5-7.4	5.8	4	1000	39				x	x			x
						6	1000	39								
									12	1500	35					
									10	1500	50					
32.0016P0001-UR	PV-KBT4/6II-UR	x		5.9-8.8	5.8	4	1000	39				x	x	x	x	x
						6	1000	39								
									12	1500	35					
									10	1500	50					

**Note:**

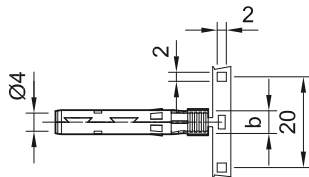
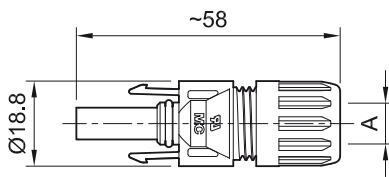
For more detailed information concerning the suitable cable gland range, please consult MA231.

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Approvals				
						mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR	CSA	CQC	JET
<b>32.0017P0001-UR</b>	PV-KST4/6II-UR		x	5.9-8.8	5.8	4	1000	39				x	x	x	x	x
						6	1000	39								
									12	1500	35					
									10	1500	50					
<b>32.0034P0001</b>	PV-KBT4/10II	x		5.9-8.8	6.5	10	1000	45				x				x
<b>32.0035P0001</b>	PV-KST4/10II		x	5.9-8.8	6.5	10	1000	45				x				x

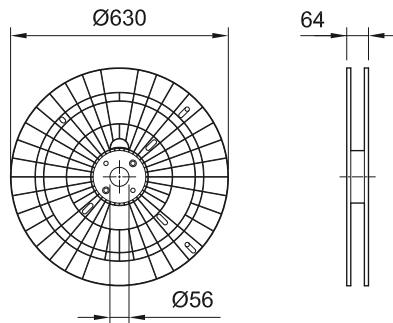
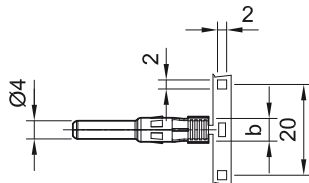
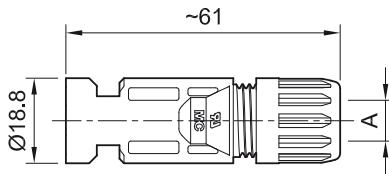
# Female and male cable coupler MC4

Open crimp contacts on carrier band (including insulating part)

## PV-KBT4...



## PV-KST4...



Assembly instructions MA231  
[www.staubli.com/electrical](http://www.staubli.com/electrical)



Sealing caps page 49  
Assembly tools page 54

In accordance with NEC 2020, requires a tool to open. Proven MULTILAM technology with high long-term stability, which ensures consistently low performance loss through-

out the entire service life of the plug connector. Tried and tested plug connectors, over 15 years of experience in the field. Available for assembly with cross-sections

up to 10 mm<sup>2</sup>. Also available as ready made leads. Mating compatibility with MC4 and MC4-Evo 2 connector families. Leads made to customer's specifications.

Technical data	
Connector system	MC4
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	105 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PC/PA
Locking system	Locking Type
Fire protection class	UL94:V-0
Ammonia resistance (acc. to DLG)	yes
Salt mist spray test, degree of severity 6	yes
TÜV Rheinland certifications number	R 60127190
TÜV Rheinland 2 PfG 2330	R 60087448
UL-File number	E343181
CSA number of certificate	250725
CQC number of certificate	CQC16024138286
JET number of certificate	B19T0013

# Female and male cable coupler MC4

Open crimp contacts on carrier band (including insulating part)

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals				
						mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR	CSA	CQC	JET
32.0010P2000-UR	PV-KBT4/2,5I-UR	x		5.0-6.0	4.0	2.5	1000	22.5				2000	x	x	x		x
									14	1500	30						
32.0011P2000-UR	PV-KST4/2,5I-UR		x	5.0-6.0	4.0	2.5	1000	22.5				2000	x	x	x		x
									14	1500	30						
32.0140P2000-UR	PV-KBT4/2,5X-UR	x		5.5-7.4	4.0	2.5	1000	22.5				2000	x	x			x
									14	1500	30						
32.0141P2000-UR	PV-KST4/2,5X-UR		x	5.5-7.4	4.0	2.5	1000	22.5				2000	x	x			x
									14	1500	30						
32.0012P2000-UR	PV-KBT4/2,5II-UR	x		5.9-8.8	4.0	2.5	1000	22.5				2000	x	x	x	x	x
									14	1500	30						
32.0013P2000-UR	PV-KST4/2,5II-UR		x	5.9-8.8	4.0	2.5	1000	22.5				2000	x	x	x	x	x
									14	1500	30						
32.0014P2000-UR	PV-KBT4/6I-UR	x		5.0-6.0	5.8	4	1000	39				2000	x	x	x		x
						6	1000	39									
									12	1500	35						
									10	1500	50						
32.0015P2000-UR	PV-KST4/6I-UR		x	5.0-6.0	5.8	4	1000	39				2000	x	x	x		x
						6	1000	39									
									12	1500	35						
									10	1500	50						
32.0142P2000-UR	PV-KBT4/6X-UR	x		5.5-7.4	5.8	4	1000	39				2000	x	x			x
						6	1000	39									
									12	1500	35						
									10	1500	50						
32.0143P2000-UR	PV-KST4/6X-UR		x	5.5-7.4	5.8	4	1000	39				2000	x	x			x
						6	1000	39									
									12	1500	35						
									10	1500	50						
32.0016P2000-UR	PV-KBT4/6II-UR	x		5.9-8.8	5.8	4	1000	39				2000	x	x	x	x	x
						6	1000	39									
									12	1500	35						
									10	1500	50						

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA231.

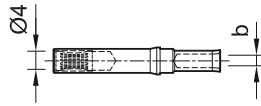
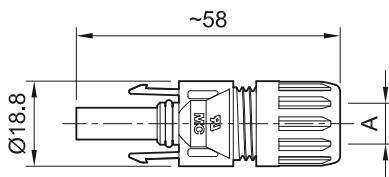


Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals					
						mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR	CSA	CQC	JET	
<b>32.0017P2000-UR</b>	PV-KST4/6II-UR		x	5.9-8.8	5.8	4	1000	39				2000	x	x	x	x	x	
						6	1000	39										
									12	1500	35							
									10	1500	50							
<b>32.0034P1700</b>	PV-KBT4/10II	x		5.9-8.8	6.5	10	1000	45				1700	x					x
<b>32.0035P1700</b>	PV-KST4/10II		x	5.9-8.8	6.5	10	1000	45				1700	x					x

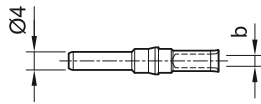
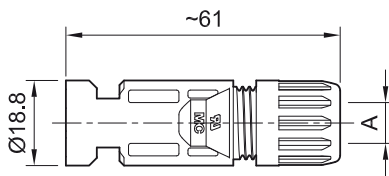
# Female and male cable coupler MC4

Female and male cable coupler as individual part with closed barrel crimp contact (including insulating part)

## PV-KBT4/5...-UR



## PV-KST4/5...-UR



### Technical data

Connector system	MC4
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	105 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PC/PA
Locking system	Locking Type
Fire protection class	UL94:V-0
Salt mist spray test, degree of severity 6	yes
UL-File number	E343181
CSA number of certificate	250725

In accordance with NEC 2020, requires a tool to open. Proven MULTILAM technology with high long-term stability, which ensures consistently low performance loss through-

out the entire service life of the plug connector. Tried and tested plug connectors, over 15 years of experience in the field. Available for assembly with cross-sections

up to 10 mm<sup>2</sup>. Also available as ready made leads. Mating compatibility with MC4 and MC4-Evo 2 connector families. Leads made to customer's specifications.

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	UL 6703			Approvals	
						AWG	DC V	A	UR	CSA
32.0094-UR	PV-KBT4/5I-UR	x		4.7-6.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0095-UR	PV-KST4/5I-UR		x	4.7-6.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0792-UR	PV-KBT4/5X-UR	x		5.5-7.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0793-UR	PV-KST4/5X-UR		x	5.5-7.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0096-UR	PV-KBT4/5II-UR	x		6.4-8.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0097-UR	PV-KST4/5II-UR		x	6.4-8.4	4.0	14	1500	30	x	
						12	1500	35		
						10	1500	50		
32.0080-UR	PV-KBT4/8II-UR	x		5.9-8.8	4.4	8	1500	70	x	x
32.0081-UR	PV-KST4/8II-UR		x	5.9-8.8	4.4	8	1500	70	x	x

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA231.



Assembly instructions MA231

[www.staubli.com/electrical](http://www.staubli.com/electrical)



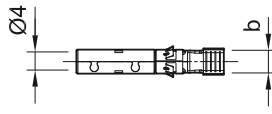
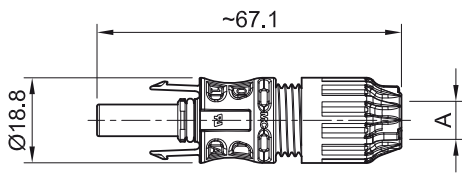
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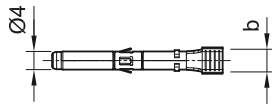
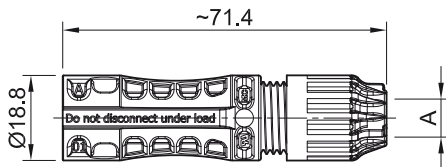
# Female and male cable coupler MC4-Evo 2

Female and male cable coupler as individual part (including insulating part)

## PV-KBT4-EVO 2/...-UR



## PV-KST4-EVO 2/...-UR



Assembly instructions MA273

[www.staubli.com/electrical](http://www.staubli.com/electrical)



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Assembly tools page 54

Internationally certified with IEC, UL, JET, cTÜVus. Approved for DC 1500 V (IEC, JET), DC 1500 V (UL) unrestricted access. MULTILAM Technology, has proven the

quality and durability several 100 million times since 2004. Suited for all climatic environments thanks to resistance to UV, ammonia, and high IP class (IP68). Available as a

field and preassembled connector, standard crimping tools can be used. Mating compatibility with MC4 connector family.

Technical data	
Connector system	MC4-Evo 2
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	115 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.2 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PA
Locking system	Locking Type
Fire protection class	UL94:V-0
Ammonia resistance (acc. to TÜV)	yes
Salt mist spray test, degree of severity 6	yes
TÜV Rheinland certifications number	R 60127169
UL-File number	E343181
JET number of certificate	B18T0049

# Female and male cable coupler MC4-Evo 2

Female and male cable coupler as individual part (including insulating part)

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Approvals		
						mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR	JET
32.0082P0001-UR	PV-KBT4-EVO 2/2,5I-UR	x		4.7-6.4	4.0	2.5	1500	39				x	x	x
									14	1500	30			
32.0083P0001-UR	PV-KST4-EVO 2/2,5I-UR		x	4.7-6.4	4.0	2.5	1500	39				x	x	x
									14	1500	30			
32.0098P0001-UR	PV-KBT4-EVO 2/2,5X-UR	x		6.1-7.3	4.0	2.5	1500	39				x	x	
									14	1500	30			
32.0099P0001-UR	PV-KST4-EVO 2/2,5X-UR		x	6.1-7.3	4.0	2.5	1500	39				x	x	
									14	1500	30			
32.0084P0001-UR	PV-KBT4-EVO 2/2,5II-UR	x		6.4-8.4	4.0	2.5	1500	39				x	x	x
									14	1500	30			
32.0085P0001-UR	PV-KST4-EVO 2/2,5II-UR		x	6.4-8.4	4.0	2.5	1500	39				x	x	x
									14	1500	30			
32.0086P0001-UR	PV-KBT4-EVO 2/6I-UR	x		4.7-6.4	5.8	4	1500	45				x	x	x
						6	1500	53						
									12	1500	35			
									10	1500	50			
32.0087P0001-UR	PV-KST4-EVO 2/6I-UR		x	4.7-6.4	5.8	4	1500	45				x	x	x
						6	1500	53						
									12	1500	35			
									10	1500	50			
32.0124P0001-UR	PV-KBT4-EVO 2/6X-UR	x		6.1-7.3	5.8	4	1500	45				x	x	
						6	1500	53						
									12	1500	35			
									10	1500	50			
32.0125P0001-UR	PV-KST4-EVO 2/6X-UR		x	6.1-7.3	5.8	4	1500	45				x	x	
						6	1500	53						
									12	1500	35			
									10	1500	50			

**Note:**

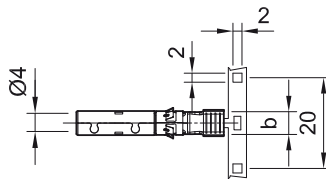
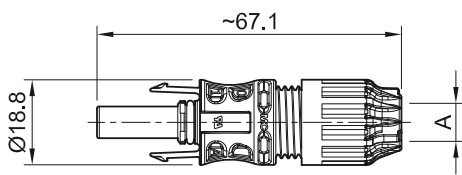
For more detailed information concerning the suitable cable gland range, please consult MA273.

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Approvals		
						mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR	JET
				A (mm)	b (mm)									
32.0088P0001-UR	PV-KBT4-EVO 2/6II-UR	x		6.4-8.4	5.8	4	1500	45				x	x	x
						6	1500	53						
									12	1500	35			
									10	1500	50			
32.0089P0001-UR	PV-KST4-EVO 2/6II-UR		x	6.4-8.4	5.8	4	1500	45				x	x	x
						6	1500	53						
									12	1500	35			
									10	1500	50			
32.0102P0001-UR	PV-KBT4-EVO 2/10X-UR	x		6.1-7.3	6.5	10	1500	69				x	x	
									8	1500	70			
32.0103P0001-UR	PV-KST4-EVO 2/10X-UR		x	6.1-7.3	6.5	10	1500	69				x	x	
									8	1500	70			
32.0092P0001-UR	PV-KBT4-EVO 2/10II-UR	x		6.4-8.4	6.5	10	1500	69				x	x	
									8	1500	70			
32.0093P0001-UR	PV-KST4-EVO 2/10II-UR		x	6.4-8.4	6.5	10	1500	69				x	x	
									8	1500	70			

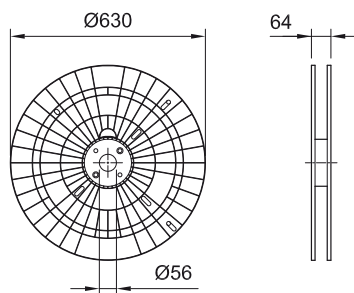
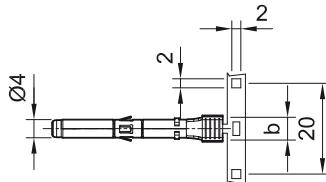
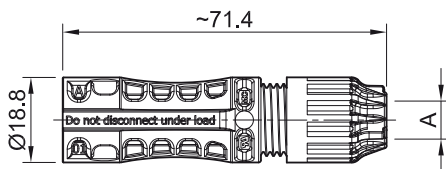
# Female and male cable coupler MC4-Evo 2

Contacts on carrier band (including insulating part)

## PV-KBT4-EVO 2/...-UR



## PV-KST4-EVO 2/...-UR



Assembly instructions MA273  
[www.staubli.com/electrical](http://www.staubli.com/electrical)



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 Assembly tools page 54



Internationally certified with IEC, UL, JET, cTÜVus. Approved for DC 1500 V (IEC, JET), DC 1500 V (UL) unrestricted access. MULTILAM Technology, has proven the

quality and durability several 100 million times since 2004. Suited for all climatic environments thanks to resistance to UV, ammonia, and high IP class (IP68). Available as a

field and preassembled connector, standard crimping tools can be used. Mating compatibility with MC4 connector family.

Technical data	
Connector system	MC4-Evo 2
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	115 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.2 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PA
Locking system	Locking Type
Fire protection class	UL94:V-0
Ammonia resistance (acc. to TÜV)	yes
Salt mist spray test, degree of severity 6	yes
TÜV Rheinland certifications number	R 60127169
UL-File number	E343181
JET number of certificate	B18T0049

# Female and male cable coupler MC4-Evo 2

Contacts on carrier band (including insulating part)

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals		
						mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR	JET
32.0082P2000-UR	PV-KBT4-EVO 2/2,5I-UR	x		4.7-6.4	4.0	2.5	1500	39				2000	x	x	x
									14	1500	30				
32.0083P2000-UR	PV-KST4-EVO 2/2,5I-UR		x	4.7-6.4	4.0	2.5	1500	39				2000	x	x	x
									14	1500	30				
32.0098P2000-UR	PV-KBT4-EVO 2/2,5X-UR	x		6.1-7.3	4.0	2.5	1500	39				2000	x	x	
									14	1500	30				
32.0099P2000-UR	PV-KST4-EVO 2/2,5X-UR		x	6.1-7.3	4.0	2.5	1500	39				2000	x	x	
									14	1500	30				
32.0084P2000-UR	PV-KBT4-EVO 2/2,5II-UR	x		6.4-8.4	4.0	2.5	1500	39				2000	x	x	x
									14	1500	30				
32.0085P2000-UR	PV-KST4-EVO 2/2,5II-UR		x	6.4-8.4	4.0	2.5	1500	39				2000	x	x	x
									14	1500	30				
32.0086P2000-UR	PV-KBT4-EVO 2/6I-UR	x		4.7-6.4	5.8	4	1500	45				2000	x	x	x
						6	1500	53							
									12	1500	35				
									10	1500	50				
32.0087P2000-UR	PV-KST4-EVO 2/6I-UR		x	4.7-6.4	5.8	4	1500	45				2000	x	x	x
						6	1500	53							
									12	1500	35				
									10	1500	50				
32.0124P2000-UR	PV-KBT4-EVO 2/6X-UR	x		6.1-7.3	5.8	4	1500	45				2000	x	x	
						6	1500	53							
									12	1500	35				
									10	1500	50				
32.0125P2000-UR	PV-KST4-EVO 2/6X-UR		x	6.1-7.3	5.8	4	1500	45				2000	x	x	
						6	1500	53							
									12	1500	35				
									10	1500	50				

**Note:**

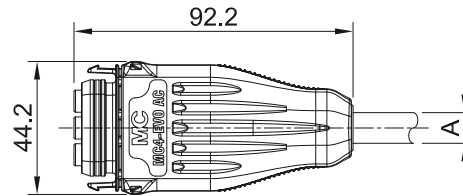
For more detailed information concerning the suitable cable gland range, please consult MA273.

Order No.	Type	Socket	Plug	Outer diameter of cable	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals			
						mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR	JET	
				A (mm)	b (mm)											
32.0088P2000-UR	PV-KBT4-EVO 2/6II-UR	x		6.4-8.4	5.8	4	1500	45				2000	x	x	x	
						6	1500	53								
									12	1500	35					
									10	1500	50					
32.0089P2000-UR	PV-KST4-EVO 2/6II-UR		x	6.4-8.4	5.8	4	1500	45				2000	x	x	x	
						6	1500	53								
									12	1500	35					
									10	1500	50					
32.0102P1700-UR	PV-KBT4-EVO 2/10X-UR	x		6.1-7.3	6.5	10	1500	69				1700	x	x		
									8	1500	70					
32.0103P1700-UR	PV-KST4-EVO 2/10X-UR		x	6.1-7.3	6.5	10	1500	69				1700	x	x		
									8	1500	70					
32.0092P1700-UR	PV-KBT4-EVO 2/10II-UR	x		6.4-8.4	6.5	10	1500	69				1700	x	x		
									8	1500	70					
32.0093P1700-UR	PV-KST4-EVO 2/10II-UR		x	6.4-8.4	6.5	10	1500	69				1700	x	x		
									8	1500	70					

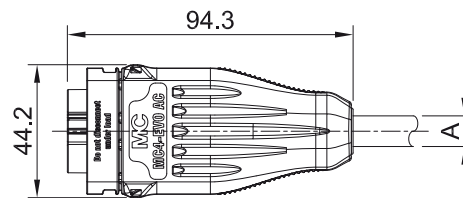
# Female and male cable coupler MC4-Evo AC

Preassembled with cable

MC-K...PV-AC1/B...



MC-K...PV-AC1/S...



## Technical data

Connector system	MC4-Evo AC
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	115 °C
Degree of protection	IP65/IP67
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	4 kV
Contact system	MULTILAM
Contact material	Copper, tin plated
Insulation material	PC
Locking system	Locking Type
Fire protection class	UL94:V-1
TÜV Rheinland certifications number	R 60126938
UL-File number	E467440

AC plug connector for micro, nano, and string inverters. 250 V (IEC) 600 V (UL). MULTILAM technology. Available preas-

sembled from the factory. Protection class IP65/IP67. IP2X unmated protected against contact. Various codings possible. Compact

form for hidden installation in the module frame or for stackable modules.

Order No.	Type	Socket	Plug	2PFG1915			UL 6703			Cable		Approvals
				mm <sup>2</sup>	DC V	A	AWG	DC V	A	Type	Length (cm)	
32.1208-10021	MC-K1.5Z3/PV-AC1-BII/-/100	x		1.5	250	16				Baohing	100	x
32.1209-10021	MC-K1.5Z3/PV-AC1-SII/-/100		x	1.5	250	16						
32.1210-10021	MC-K2.5Z3/PV-AC1-BII/-/100	x		2.5	250	20						
32.1211-10021	MC-K2.5Z3/PV-AC1-SII/-/100		x	2.5	250	20						
32.1212-10021	MC-K4Z3/PV-AC1-BIII/-/100	x		4	250	26						
32.1213-10021	MC-K4Z3/PV-AC1-SIII/-/100		x	4	250	26						
32.1214-10021	MC-K1.5Y3/PV-AC1-BI/-/100	x					16	600	26	BETAFlam Solar AC flex FRNC	100	x
32.1215-10021	MC-K1.5Y3/PV-AC1-SI/-/100		x				16	600	26			
32.1216-10021	MC-K2.5Y3/PV-AC1-BII/-/100	x					14	600	32			
32.1217-10021	MC-K2.5Y3/PV-AC1-SII/-/100		x				14	600	32			
32.1218-10021	MC-K4Y3/PV-AC1-BIII/-/100	x					12	600	43			
32.1219-10021	MC-K4Y3/PV-AC1-SIII/-/100		x				12	600	43			



Assembly instructions MA284  
[www.staubli.com/electrical](http://www.staubli.com/electrical)

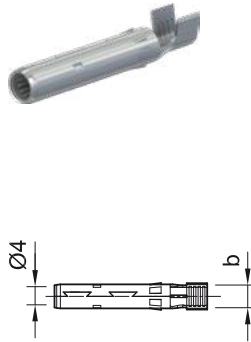


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 Unlocking tool page 54

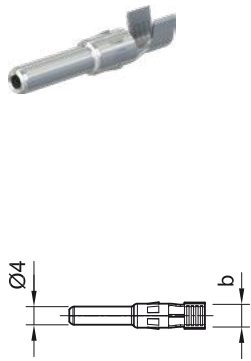
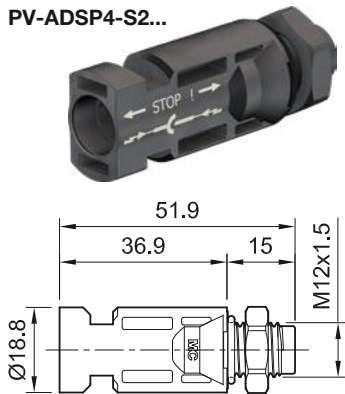
# Female and male panel receptacle MC4

Female and male panel receptacles as individual part (including insulating part)

**PV-ADBP4-S2...**



**PV-ADSP4-S2...**



Technical data	
Connector system	MC4
Ambient temperature range	-40 °C...+85 °C (TÜV/UL); -40 °C...+85 °C (TÜV)
Upper limiting temperature	105 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PC/PA
Locking system	Locking Type
Fire protection class	UL94:V-0
TÜV Rheinland certifications number	R 60127181
UL-File number	E343181
CSA number of certificat	250725

MC4 panel-receptacle connectors are the interface between an inverter or junction box or junction and a branch cable. Mounting directly by means of screw thread or in per-

forated plate with plastic nut (included in delivery). Rapid, precise plugging. Protection class IP68 (1 m/1 h) guarantees the highest connection safety. Mating compatibility with

MC4 connector family. Includes sealing element for enclosure.

Order No.	Type	Socket	Plug	Width of crimp opening b (mm)	IEC 62852			UL 6703			Approvals		
					mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR	CSA
32.0076P0001-UR	PV-ADBP4-S2-UR/2,5	x		4.0	1.5	1250	17.5				x	x	x
					2.5	1250	22.5						
								14	1500	30			
32.0077P0001-UR	PV-ADSP4-S2-UR/2,5		x	4.0	1.5	1250	17.5				x	x	x
					2.5	1250	22.5						
								14	1500	30			
32.0078P0001-UR	PV-ADBP4-S2-UR/6	x		5.8	4	1250	39				x	x	x
					6	1250	45						
								12	1500	35			
								10	1500	50			
32.0079P0001-UR	PV-ADSP4-S2-UR/6		x	5.8	4	1250	39				x	x	x
					6	1250	45						
								12	1500	35			
								10	1500	50			
32.0150P0001	PV-ADBP4-S2/10	x		6.5	10	1250	51				x		
32.0151P0001	PV-ADSP4-S2/10		x	6.5	10	1250	51				x		

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA275.



Assembly instructions MA275

[www.staubli.com/electrical](http://www.staubli.com/electrical)



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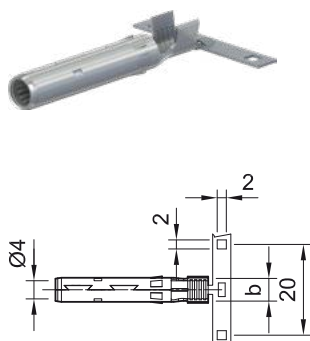
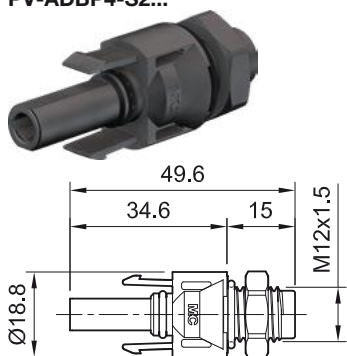
Special socket wrench insert page 53

Unlocking tool page 54

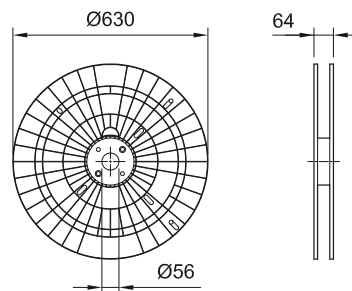
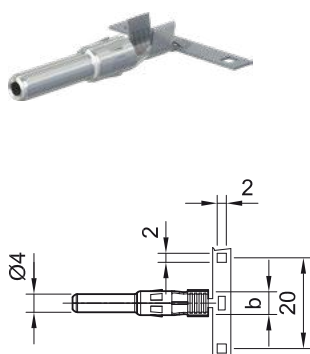
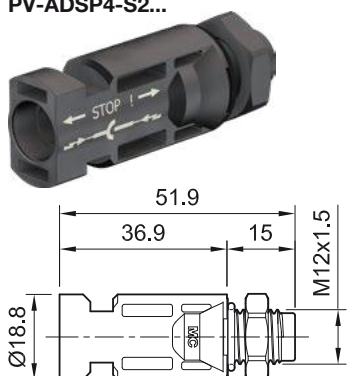
# Female and male panel receptacle MC4

Contacts on carrier band (including insulating part)

## PV-ADBP4-S2...



## PV-ADSP4-S2...



Technical data	
Connector system	MC4
Ambient temperature range	-40 °C...+85 °C (TÜV/UL); -40 °C...+85 °C (TÜV)
Upper limiting temperature	105 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.25 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PC/PA
Locking system	Locking Type
Fire protection class	UL94:V-0
TÜV Rheinland certifications number	R 60127181
UL-File number	E343181
CSA number of certificate	250725



MC4 panel-receptacle connectors are the interface between an inverter or junction box or junction and a branch cable. Mounting directly by means of screw thread or in per-

forated plate with plastic nut (included in delivery). Rapid, precise plugging. Protection class IP68 (1 m, 1 h) guarantees the highest connection safety. Mating compatibility with

MC4 connector family. Includes sealing element for enclosure.

Order No.	Type	Socket	Plug	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals		
					mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR	CSA
32.0076P2000-UR	PV-ADBP4-S2-UR/2,5	x		4.0	1.5	1250	17.5				2000	x	x	x
					2.5	1250	22.5							
								14	1500	30				
32.0077P2000-UR	PV-ADSP4-S2-UR/2,5		x	4.0	1.5	1250	17.5				2000	x	x	x
					2.5	1250	22.5							
								14	1500	30				
32.0078P2000-UR	PV-ADBP4-S2-UR/6	x		5.8	4	1250	39				2000	x	x	x
					6	1250	45							
								12	1500	35				
								10	1500	50				
32.0079P2000-UR	PV-ADSP4-S2-UR/6		x	5.8	4	1250	39				2000	x	x	x
					6	1250	45							
								12	1500	35				
								10	1500	50				
32.0150P1700	PV-ADBP4-S2/10	x		6.5	10	1250	51				1700	x		
32.0151P1700	PV-ADSP4-S2/10		x	6.5	10	1250	51				1700	x		

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA275.



Assembly instructions MA275

[www.staubli.com/electrical](http://www.staubli.com/electrical)



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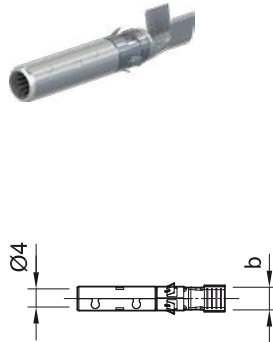
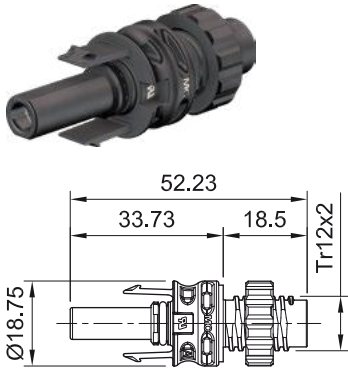
Special socket wrench insert page 53

Unlocking tool page 54

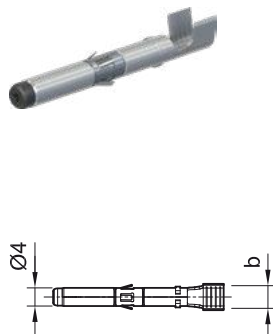
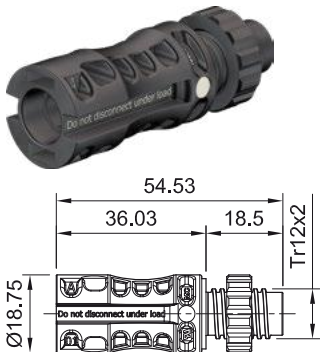
# Female and male panel receptacle MC4-Evo 2

Female and male panel receptacles as individual part (including insulating part)

## PV-ADB4-EVO 2



## PV-ADS4-EVO 2



Technical data	
Connector system	MC4-Evo 2
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	115 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.2 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PA
Locking system	Locking Type
Fire protection class	UL94:V-0
TÜV Rheinland certifications number	R 60127171
UL-File number	E343181

MC4-Evo 2 panel-receptacle connectors are the interface between the inverter or the distributor housing and string. Assembly directly via the threads or in the perforated plate with the plastic nut (contained in

scope of delivery). Thanks to the D shape, the threaded connection is secured against turning. For 1500 DC V(IEC), 1500 DC V (UL) approved unobstructed. Degree of protection IP68 (1m/1h) guarantees highest con-

nection safety. Fast and clean connection. Plug compatible with the original MC4 plug connector family. With preassembled flat seal

Order No.	Type	Socket	Plug	Width of crimp opening	IEC 62852			UL 6703			Approvals	
					mm <sup>2</sup>	DC V	A	AWG	DC V	A	TÜV	UR
32.0020P0001-UR	PV-ADB4-EVO 2/2,5-UR	x		4.0	2.5	1500	32				x	x
								14	1500	30		
32.0021P0001-UR	PV-ADS4-EVO 2/2,5-UR		x	4.0	2.5	1500	32				x	x
								14	1500	30		
32.0022P0001-UR	PV-ADB4-EVO 2/6-UR	x		5.8	4	1500	42				x	x
					6	1500	47					
								12	1500	35		
								10	1500	50		
32.0023P0001-UR	PV-ADS4-EVO 2/6-UR		x	5.8	4	1500	42				x	x
					6	1500	47					
								12	1500	35		
								10	1500	50		

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA285.



Assembly instructions MA285

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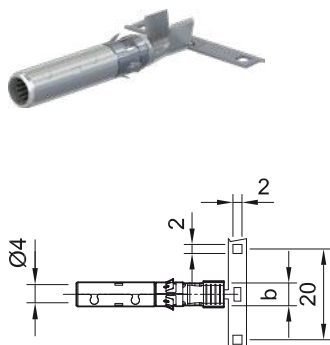
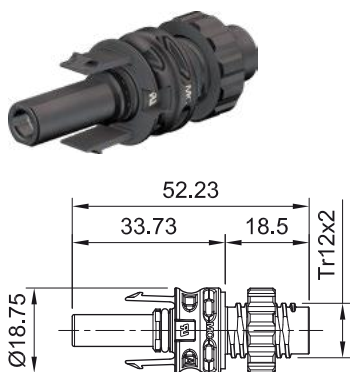
Sealing caps page 49

Unlocking tool page 54

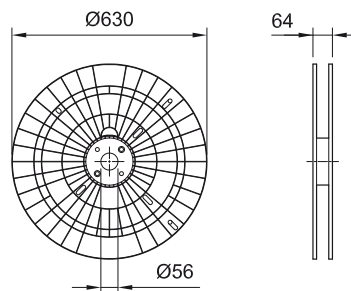
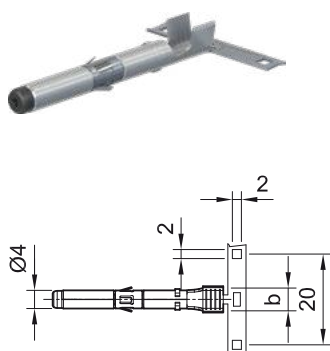
# Female and male panel receptacle MC4-Evo 2

Contacts on carrier band (including insulating part)

## PV-ADB4-EVO 2



## PV-ADS4-EVO 2



### Technical data

Connector system	MC4-Evo 2
Ambient temperature range	-40 °C...+85 °C (TÜV/UL)
Upper limiting temperature	115 °C
Degree of protection	IP68 (1 m, 1 h)/IP65
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	3
Max. contact resistance of the connector	0.2 mΩ
Rated Impulse Voltage	16 kV
Contact system	MULTILAM
Type of connection	Crimping
Contact material	Copper, tin plated
Insulation material	PA
Locking system	Locking Type
Fire protection class	UL94:V-0
TÜV Rheinland certifications number	R 60127171
UL-File number	E343181

MC4-Evo 2 panel-receptacle connectors are the interface between the inverter or the distributor housing and string. Assembly directly via the threads or in the perforated plate with the plastic nut (contained in

scope of delivery). Thanks to the D shape, the threaded connection is secured against turning. For 1500 DC V(IEC), 1500 DC V (UL) approved unobstructed. Degree of protection IP68 (1m/1h) guarantees highest con-

nection safety. Fast and clean connection. Plug compatible with the original MC4 plug connector family. With preassembled flat seal

Order No.	Type	Socket	Plug	Width of crimp opening	IEC 62852			UL 6703			Contacts per reel	Approvals	
					mm <sup>2</sup>	DC V	A	AWG	DC V	A		TÜV	UR
32.0020P2000-UR	PV-ADB4-EVO 2/2,5-UR	x		4.0	2.5	1500	32				2000	x	x
								14	1500	30			
32.0021P2000-UR	PV-ADS4-EVO 2/2,5-UR		x	4.0	2.5	1500	32				2000	x	x
								14	1500	30			
32.0022P2000-UR	PV-ADB4-EVO 2/6-UR	x		5.8	4	1500	42				2000	x	x
					6	1500	47						
								12	1500	35			
								10	1500	50			
32.0023P2000-UR	PV-ADS4-EVO 2/6-UR		x	5.8	4	1500	42				2000	x	x
					6	1500	47						
								12	1500	35			
								10	1500	50			

**Note:**

For more detailed information concerning the suitable cable gland range, please consult MA285.



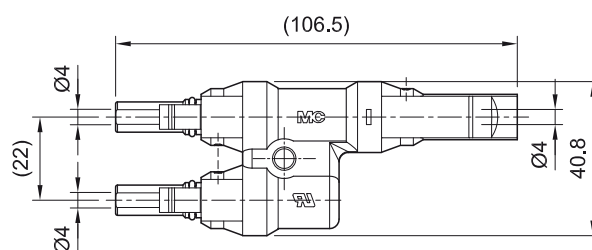
Assembly instructions MA285  
[www.staubli.com/electrical](http://www.staubli.com/electrical)



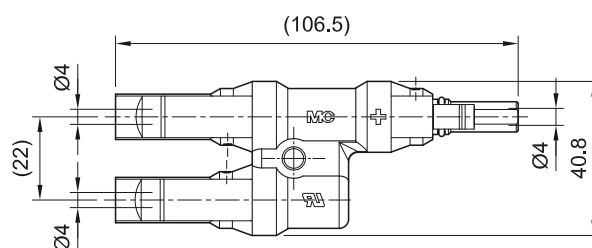
Sealing caps page 49  
 Unlocking tool page 54

# Branch socket, branch plug MC4

PV-AZB4



PV-AZS4



## Technical data

Connector system	MC4
Rated voltage	DC 1500 V (UL)
Rated current	50 A
Ambient temperature range	-40 °C...+85 °C (UL)
Upper limiting temperature	105 °C
Degree of protection	IP67
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	2
Max. contact resistance of the connector	0.5 mΩ
Rated Impulse Voltage	12 kV
Contact system	MULTILAM
Contact material	Copper, tin plated
Insulation material	PC
Locking system	Locking Type
Fire protection class	UL94:V-0
UL-File number	E343181

For a safe and simple parallel or serial parallel connection of PV-modules. Pluggable with single-pole Stäubli PV-cable coupler

MC4 and MC4-Evo 2.

Order No.	Type	Designation	Approvals
			UR
<b>32.0018</b>	PV-AZB4	Branch socket MC4	x
<b>32.0019</b>	PV-AZS4	Branch plug MC4	x



**Assembly instructions MA250**

[www.staubli.com/electrical](http://www.staubli.com/electrical)



**Sealing caps page 49**

**Unlocking tool page 54**

## CABLES

# PV Cable Flex-Sol-Evo-DX...

### FLEX-SOL-EVO-DX...



#### Technical data

Test voltage acc. to EN 50395-6	AC 7.5 kV/DC 15 kV
Ambient temperature range	-40 °C...+90 °C
Upper limiting temperature	120 °C
Insulation resistance	>= 1000 MΩkm
Insulation, according to IEC 60332-1-2	Flame retardant
Inner insulation (white)	XLPE
Sheath insulation (black)	Polyolefin
Bending radius dynamic/static	> 5x OD, >4x OD mm
Resistant to...	UV, Ozone, Hydrolysis
Resistance to ... tested according to IEC 60811-2-1	Acids, alcalis, oil
Sheath colour	Black
TÜV Rheinland certifications number	R 50408868, R50359551
UL-File number	E470857



Halogen free cross-linked polyolefin double layers photovoltaic cables for use at the photovoltaic power systems.

Order No.	Type	Conductor cross section		Conductor diameter	Outer diameter	Strand design	Conductor resistance / 20°C	IEC 62930		UL 4703		Approvals		
		mm <sup>2</sup>	AWG					mm	mm	n x Ø mm	mΩ	A	DC V	A
62.7434-91021	FLEX-SOL-EVO-DX 2,5	2.5	14	2	5.94	47 x 0.25	8.21	41	1500	41	2000	x	x	x
62.7435-91021	FLEX-SOL-EVO-DX 4,0	4	12	2.4	6.35	52 x 0.30	5.09	55	1500	55	2000	x	x	x
62.7436-91021	FLEX-SOL-EVO-DX 6,0	6	10	3	6.97	78 x 0.30	3.39	70	1500	70	2000	x	x	x
62.7437-91021	FLEX-SOL-EVO-DX 10,0	10	8	4.1	8.57	77 x 0.40	1.95	98	1500	98	2000	x	x	x

# PV Cable Flex-Sol-Evo-TX...

## FLEX-SOL-EVO-TX...



Technical data	
Test voltage acc. to EN 50395-6	AC 6.5 kV/DC 15 kV
Ambient temperature range	-40 °C...+90 °C
Upper limiting temperature	120 °C
Insulation resistance	$\geq 1000 \text{ M}\Omega\text{km}$
Insulation, according to IEC 60332-1-2	Flame retardant
Inner insulation (white)	XLPE
Sheath insulation (black)	Polyolefin
Bending radius dynamic/static	$> 5x \text{ OD}$ , $>4x \text{ OD mm}$
Resistant to...	UV, Ozone, Hydrolysis
Resistance to ... tested according to IEC 60811-2-1	Acids, alcalis, oil
Sheath colour	Black
TÜV Rheinland certifications number	R 50408868, R50359551

Halogen free cross-linked polyolefin double layers photovoltaic cables for use at the photovoltaic power systems.

Order No.	Type	Conductor cross section		Conductor diameter	Outer diameter	Strand design	Conductor resistance / 20°C	IEC 62930		Approvals
		mm <sup>2</sup>	AWG	mm	mm			A	DC V	
<b>62.7430-91021</b>	FLEX-SOL-EVO-TX 2,5	2.5		2	5.0	47 x 0.25	8.21	41	1500	x
<b>62.7431-91021</b>	FLEX-SOL-EVO-TX 4,0	4		2.4	5.4	52 x 0.30	5.09	55	1500	x
<b>62.7432-91021</b>	FLEX-SOL-EVO-TX 6,0	6		3	6.0	78 x 0.30	3.39	70	1500	x
<b>62.7433-91021</b>	FLEX-SOL-EVO-TX 10,0	10		4.1	7.2	77 x 0.40	1.95	98	1500	x

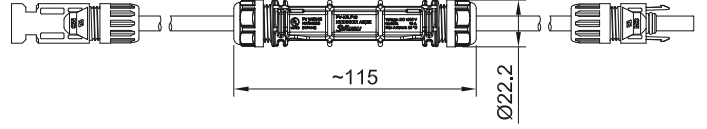
## IN-LINE-FUSES

# In-Line-Fuse PV-K/ILF

PV-K/...ILF.../6N...UL



PV-K/ILF.../6N...UL



PV-K/1500ILF.../6N...UL



### Technical data

Connector system	MC4
Degree of protection	IP68 (1 m, 1 h)/IP65
Test voltage	AC 6.6 kV (1 min)
Ambient temperature range	-40 °C...+50 °C (UL)
Upper limiting temperature	105 °C
Max. contact resistance of the connector	0.25 mΩ
Contact material	Copper, tin plated
Insulation material	PC/PA
Fire protection class	UL94:V-0
UL-File number	E474445

The In-line-Fuse PV-K/ILF with a crimping connection guarantees a long-lasting, stable connection in comparison to conventional omega-style clips: Minimal energy loss, low

heat generation. Robust housing, safety class IP68. Cable cross-section 10 AWG/ 6 mm<sup>2</sup>. Other fuse ratings available upon request.

Order No.	Type	UL 9703		Lead length cm	Connector system	Approvals UR
		DC V	A			
55000127-0050UL	PV-K/ILF10/6N0050UL	1000	10	50	MC4	x
55000128-0050UL	PV-K/ILF15/6N0050UL	1000	15	50	MC4	x
55000129-0050UL	PV-K/ILF20/6N0050UL	1000	20	50	MC4	x
55000130-0050UL	PV-K/ILF30/6N0050UL	1000	30	50	MC4	x
55000189-0052UL	PV-K/1500ILF4/6N0052UL	1500	4	52	MC4	x
55000334-0055UL	PV-K/1500ILF5/6N0055UL	1500	5	55	MC4	x
55000254-0055UL	PV-K/1500ILF6/6N0055UL	1500	6	55	MC4	x
55000190-0055UL	PV-K/1500ILF10/6N0055UL	1500	10	55	MC4	x
55000191-0055UL	PV-K/1500ILF15/6N0055UL	1500	15	55	MC4	x
55000192-0055UL	PV-K/1500ILF20/6N0055UL	1500	20	55	MC4	x



Assembly instructions MA701

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## ACCESSORIES

# Adapter leads

### Adapter test lead MC4

One end equipped with Stäubli PV connector, the other end with Ø 4 mm Stäubli safety plug for measuring instruments with

Ø 4 mm safety sockets ensuring safe current and voltage measuring on PV-modules and systems.

PV-AMLB4/150



PV-AMLS4/150



Order No.	Type	Socket	Plug	Connector system	Colour
32.1198-15021	PV-AMLB4/150	x		MC4	21
32.1198-15023	PV-AMLB4/150	x		MC4	23
32.1198-15029	PV-AMLB4/150	x		MC4	29
32.1199-15021	PV-AMLS4/150		x	MC4	21
32.1199-15022	PV-AMLS4/150		x	MC4	22

#### Technical data

Connector system	MC4
Rated voltage	1000 V
Rated current	19 A
Category	CAT III
Degree of pollution	2
Lead cross section	1 mm <sup>2</sup>
Lead length	150
Lead insulation	PVC



Sealing caps page 49

# Test socket and plug MC4


Special construction with gold plated contacts for test and measurement to achieve higher mating cycles. Without locking system.

**PV-KBT4II-P AU**



**PV-KST4II-P AU**



Order No.	Type	Socket	Plug	Connector system	 Assembly instruction
32.0044	PV-KBT4II-P AU	x		MC4	MA260
32.0045	PV-KST4II-P AU		x	MC4	MA260

## Technical data

Connector system	MC4
Rated voltage	DC 1000 V (IEC)
Rated current	30 A
Degree of protection, unmated	IP2X
Category	CAT III
Degree of pollution	2
Max. contact resistance of the connector	0.25 mΩ
Contact material	Copper, gold plated
Lead cross section	2.5 mm <sup>2</sup> ; 4 mm <sup>2</sup> (12 AWG; 14 AWG)
Insulation material	PC/PA

# Test plugs

## Test plug MC4

This test plug is used to control the correct location of the MC4 contact in the insulation.

### PV-PST



Order No.	Type	 Assembly instruction
32.6028	PV-PST	MA231, MA260, MA275

## Test plug MC4-Evo 2

This test plug is used to control the correct location of the MC4-Evo 2 contact in the insulation.

### PV-EVO-PST



Order No.	Type	 Assembly instruction
32.6073	PV-EVO-PST	MA273

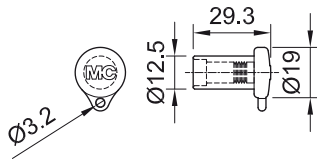


# Sealing caps

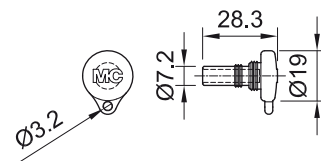
## Sealing caps MC4, MC4-Evo 2 and MC4-Evo AC

Sealing caps for protective purpose of unplugged PV connectors.

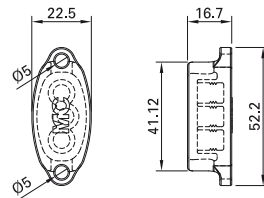
**PV-BVK4**



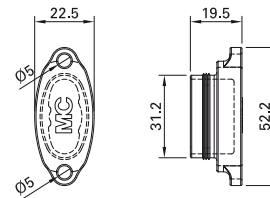
**PV-SVK4**




**PV-BVK-EVO AC**



**PV-SVK-EVO AC**



Order No.	Type	Suitable for socket side	Suitable for plug side	Material	Connector system	 Assembly instruction
32.0716	PV-BVK4	x		TPE	MC4/MC4-Evo 2	MA258
32.0717	PV-SVK4		x	TPE	MC4/MC4-Evo 2	MA258
32.0748	PV-BVK-EVO AC	x		TPE	MC4-Evo AC	MA284
32.0749	PV-SVK-EVO AC		x	TPE	MC4-Evo AC	MA284

## TOOLS


# Assembly tools

### Stripping pliers PV-AZM-...

Specially adapted for the Flex-Sol-Evo PV cable. For stripping small cable quantities. With length stop.

PV-AZM-...



Order No.	Type	Designation	Pliers cross sections	 Assembly instruction
			mm <sup>2</sup>	
<b>32.6027-156</b>	PV-AZM-156	Stripping pliers incl. built-in stripping blades	1.5; 2.5; 4; 6	MA231, MA260, MA267
<b>32.6027-410</b>	PV-AZM-410	Stripping pliers incl. built-in stripping blades	4; 6; 10	MA231, MA267
<b>32.6057-156</b>	PV-M-AZM-156	Stripping blades set	1.5; 2.5; 4; 6	MA231, MA260, MA267
<b>32.6057-410</b>	PV-M-AZM-410	Stripping blades set	4; 6; 10	MA231, MA267


## Crimping pliers for industrial use PV-CZ...

These tools are to be used for the assembly of UL- and TÜV-approved products. These are suited for the processing of high num-

bers of pieces and can be adjusted to the product to be processed with the help of changeable locators and crimp inserts.

### PV-CZM...




Order No.	Type	Designation	Pliers cross sections		Connector system	Crimping pliers type	 Assembly instruction	
			mm <sup>2</sup>	AWG				
<b>32.6020-16100A</b>	PV-CZM-16100A	Crimping pliers incl. Locator and crimping die	2.5; 4; 6	14; 12; 10	MC4 AU	For closed crimp contacts (O-Crimp)	MA260	
<b>32.6020-18100</b>	PV-CZM-18100		2.5; 4	14; 12	MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6020-19100</b>	PV-CZM-19100		2.5; 4; 6	14; 12; 10	MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6020-20100</b>	PV-CZM-20100		4; 10		MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6020-21100</b>	PV-CZM-21100		6; 10		MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6020-22100</b>	PV-CZM-22100			12; 10; 8	MC4	mixed	MA251	
<b>32.6020-23100</b>	PV-CZM-23100			14; 12; 10; 8	MC4	For closed crimp contacts (O-Crimp)	MA251	
<b>32.6020-40100</b>	PV-CZM-40100			2.5; 4	14; 12	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6020-41100</b>	PV-CZM-41100			2.5; 4; 6	14; 12; 10	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6020-42100</b>	PV-CZM-42100			4; 10	12; 8	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6021-16100</b>	PV-ES-CZM-16100	Crimping die	2.5; 4; 6	14; 12; 10	MC4	For open crimp contacts (B-Crimp)	MA260	
<b>32.6021-18100</b>	PV-ES-CZM-18100		2.5; 4	14; 12	MC4	For closed crimp contacts (O-Crimp)	MA251	
<b>32.6021-19100</b>	PV-ES-CZM-19100		2.5; 4; 6	14; 12; 10	MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6021-20100</b>	PV-ES-CZM-20100		4; 10		MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6021-21100</b>	PV-ES-CZM-21100		6; 10		MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6021-22100</b>	PV-ES-CZM-22100			12; 10; 8	MC4	mixed	MA251	
<b>32.6021-23100</b>	PV-ES-CZM-23100			14; 12; 10; 8	MC4	For closed crimp contacts (O-Crimp)	MA251	
<b>32.6021-40100</b>	PV-ES-CZM 40100			2.5; 4	14; 12	MC4-Evo 2	mixed	MA251
<b>32.6021-41100</b>	PV-ES-CZM 41100			2.5; 4; 6	14; 12; 10	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6021-42100</b>	PV-ES-CZM 42100			4; 10	12; 8	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6040</b>	PV-LOC	Locator	2.5; 4; 6; 10	14; 12; 10	MC4	For open crimp contacts (B-Crimp)	MA251	
<b>32.6055</b>	PV-LOC-B			12; 10; 8	MC4	mixed	MA251	
<b>32.6056</b>	PV-LOC-C			2.5; 4; 6; 10	14; 12; 10	MC4-Evo 2	For open crimp contacts (B-Crimp)	MA251
<b>32.6074</b>	PV-LOC-D			14; 12; 10; 8	MC4	For closed crimp contacts (O-Crimp)	MA251	

## Crimping pliers for private use PV-CZM-BS

Suitable for the assembly of products approved by TÜV in small amounts. Complete tool for the assembly of the original MC4.

### PV-CZM-BS

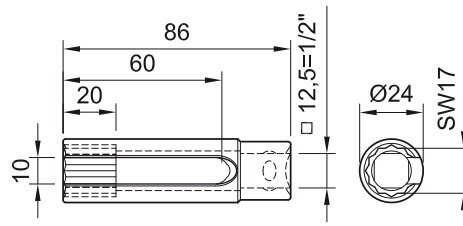


Order No.	Type	Designation	Pliers cross sections		Connector system	 Assembly instruction
			mm <sup>2</sup>	AWG		
32.6025	PV-CZM-BS	Crimping pliers, complete	2.5; 4; 6		MC4	MA289

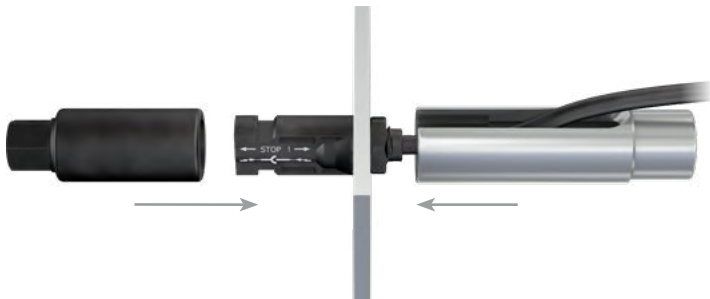
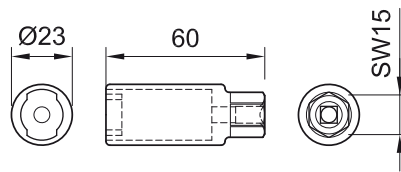
## Socket wrench insert


Stäubli recommends these socket wrench inserts for a simple and safe assembly of the panel receptacles.

### PV-WZ-AD/GWD



### PV-SSE-AD4

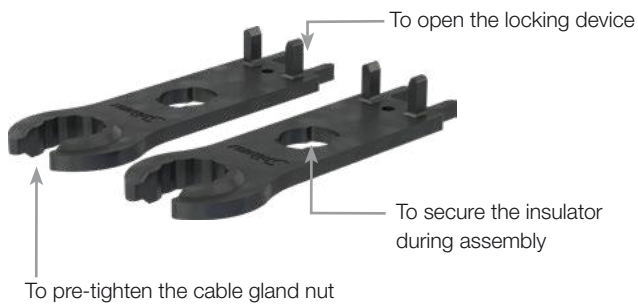


Order No.	Type	Connector system	 Assembly instruction
32.6006	PV-WZ-AD/GWD	MC4	MA231, MA260, MA275
32.6026	PV-SSE-AD4	MC4	MA231

## Open-end spanner and unlocking tool MC4, MC4-Evo 2 and MC4-Evo AC

To tighten and unscrew the cable gland and to open the locking device of the connection.

### PV-MS



### PV-MS-PLS




### PV-MS-EVO AC



### PV-MS-MC4-EVO 2



Order No.	Type	Designation	Connector system	 Assembly instruction
32.6024	PV-MS	Open-end spanner set (2 pcs.), plastic	MC4	MA231, MA260, MA275
32.6058	PV-MS-PLS	Open-end spanner set (2 pcs.), metal	MC4/MC4-Evo 2	MA273
32.6066	PV-MS-MC4-Evo 2	Unlocking tool, plastic	MC4-Evo 2	MA270
32.6075	PV-MS-EVO AC	Unlocking tool, plastic	MC4-Evo AC	MA284

## APPENDIX

# General information

Users wishing to employ products listed in the catalogue for applications we have not considered are themselves responsible for making certain that the products comply with standards other than those stated.

# Technical information

### Crimped terminations

For termination of the conductors to the crimping sleeves of the PV plug connectors we recommend using the stated crimping tools. For UL certified products only the tools mentioned can be used for self-assembly according to the assembly instructions. The crimping sleeves are designed for highly flexible conductors of the stated cross-section ranges. The use of flexible conductors is possible. It is advantageous to use tinned conductors.

### Connecting cables

To ensure that the cable outlets of the PV plug connectors are sufficiently watertight, connecting cables of the specified diameter ranges for the insulating casings must be used.

### Laying conditions

When laying the PV leads, avoid having the connecting cable resting on a sharp edge at the exit from the PV connector. We recommend observing the minimum bending radius of the connecting cables.

### Mating cycles

The maximum of the PV connectors is 100 plugging cycles.

### Rated current

Maximum continuous electric current as specified by the manufacturer.

### Max. system voltage

Is the maximum voltage for which the components of the PV plug connector system may be used and are rated in accordance with IEC 60664-1.

### Contact resistance

is the resistance at the point of contact between two contact surfaces.

### Test voltage

Is the voltage at which the new components of the PV plug connector system are tested under defined conditions without breakdown or arcing.

### Unplugging under load

PV plug connections must not be unplugged while under load.

### Protection against weather

Sealing caps must be used to protect unplugged PV-connectors from moisture and dirt.

# Further technical data on leads

## Smallest Permissible Bend Radii

VDE 0298, part 3, stipulates minimum permissible bend radii of leads. In the following table, the minimum bend radii are shown for fixed and mobile flexible leads.

Bend radi	
Rated voltage	> 600 V
Fixed	6 d
Mobile	10 d

d = Outside diameter of lead

## Why tinned multistrand copperwires?

If bright-soft copper stranded wires are exposed to temperatures > 90°C, this can result in discoloration of the copper and an impairment of its soldering properties.

Reactions between the copper and the insulating material may also occur which have a deleterious effect on the mechanical properties of the flexible leads.

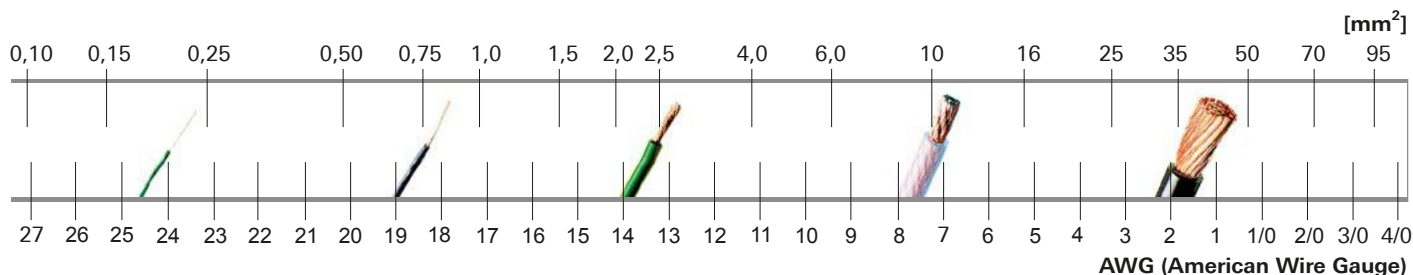
## Resistance of conductor at 20°C for class 5 Cu conductors

The table shows the conductor resistance for fine-stranded copper wires with bare individual strands at 20°C in relation to the nominal cross-section according to IEC/EN 60228.

Nominal cross section mm <sup>2</sup>	Conductor resistance Ω/km
1.5	13.3
2.5	7.98
4.0	4.95
6.0	3.30
10	1.91

## Table mm<sup>2</sup> / AWG

The nominal cross-section of our multi-strand wires is stated in sq. mm. The following chart gives an indication of their comparability with corresponding AWG values.<sup>1)</sup>



<sup>1)</sup> The chart is based on values for stranded wires given in UL 758 "UL Standard for Safety for Appliance Wiring Material".



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