



光伏解決方案

# 電力連接 + 可靠守護

從光伏組件到逆變器、儲能和智能電網



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2024



# 可靠、安全且耐用的 電連接解決方案

## 快捷，可靠，降本，增效

伴隨全球對碳達峰、碳中和的加速實現，光伏發電的發展日新月異。想要獲得成功就離不開可靠且有效率的連線。連接需要使用經久耐用的產品，使用壽命符合光伏電站的要求，能夠抵禦嚴苛的環境，同時無需維護。您的連接還要能夠滿足日益增長的電氣性能的需求，易於安裝，保障安裝人員及各項操作的安全。



因此，我們致力於確保“可靠、安全和耐用的電連接解決方案”。從早期設計到現場安裝和系統調試，直到全壽命運行週期。憑藉在能源產業超過25年的經驗，我們了解您的需求，隨時助您克服艱難挑戰。

當您面臨挑戰，我們能及時為您提供支持。為滿足您的光伏發電需求，我們提供了更靈活的設計，更高的載流量及更成熟的解決方案，以減少安裝時間、人工和材料成本。

### 連接的實際成本

光電產業保持競爭力需要優化成本和高效營運。即使最小的部件也會影響系統發電量，技術失效通常是造成收益損失的主要原因。高品質連接器和佈線有助於降低系統風險，並達到最佳效率。



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# 一站式合作夥伴

## 提供經濟高效、可靠耐用的即插即用解決方案

無論是光電模組、逆變器、升壓變電站或儲能設備 — 我們都可以一站式滿足您在連線上的多重需求。憑藉創新的即插即用解決方案和專業的光電站工程諮詢，充分展現了您與誼能資訊（i-Powers Network，簡稱「i-Powers」）強強聯合的理由。無論您選擇何種方案，我們都能為您提供支援：總線匯流方案、傳統匯流方案或漂浮電站匯流方案。

### 諮詢



我們提供前期工程建議 - 包括電纜管理建議，可以最大限度地提高整個系統的效率，降低材料和人工成本，同時確保電氣可靠性。

### 設計



我們可以與您合作，共同創建旨在提高效率的客製化解決方案。包括帶保險絲和不帶保險絲的光伏線纜、跳線線纜、連接器、總線電纜和保護箱等配置方案。

### 測試



我們的解決方案已通過了型式試驗，可幫助您簡化系統調試，減少驗收時間和提高維護效率。我們的線纜100% 通過例行試驗，以確保其高度的可靠性。

### 培訓



大多數光伏電站的故障都是由於安裝不當導致。我們透過為施工人員和管理人員提供量身定制的現場安裝培訓和能力評估，幫助您提高安裝精度。



## + 強強聯合

### + 降低全壽命週期成本

憑藉一站式服務能提高您光伏電站的連接效率。我們多樣化的產品組合為您設計客製化解決方案，節省時間和人工成本。

### + 安裝人員和工程支持

透過我們專門的光伏工程諮詢和安裝培訓，提高您的經濟效益。我們協助您減少壓降、優化電纜管理、線纜選型和提高安裝效率。

### + 更簡單，更快捷，更安全的安裝

我們的即插即用解決方案有效減少了安裝時間。透過盡可能減少零部件數量和安裝步驟，讓安裝變得更為簡便。

### + 電網可靠性

憑藉著久負盛名的品牌和經過極端條件驗證的產品。I-POWERS 可訂製化的總線匯流解決方案，減少了運維和搶修的時間。

### + 電網監測

我們的組串監控系統和配備電壓傳感器的智能型可分離連接器提供實時監控，從而建構一個更智能的光伏電站。

### + 野生動物和資產保護

透過定製化解決方案為架空線和升壓變電站設備提供絕緣和保護，防止野生動物引發的破壞，杜絕火災隱患。



# 效率與收益

## 承受嚴苛環境

對材料科學的不懈追求，使我們的光伏產品經久耐用。它們經過特殊工藝，通過了防水試驗、冷熱循環試驗、紫外線照射試驗、潮濕環境試驗及機械強度試驗。

我們的直流連接器具備阻燃能力，堅固耐用、可抵禦動物破壞。直流連接器符合 UL、cUL 和 IEC 標準，交流連接器符合 IEEE、ANSI、IEC 和 GB 等適用標準。

我們擁有豐富的經驗，和業界領先的品牌。如果您知道史陶比爾 (Stäubli)，那您一定不會對我們感到陌生。選擇具有高品質產品和服務的合作夥伴，對於提升專案可融資能力和經濟效益至關重要。

i-Powers 的優質產品和專業服務能夠協助您實現風險最小化和效益最大化。當考慮到光電專案的獲利能力和投資回報時，低度電成本是決定因素。我們的產品久經考驗，憑藉其“安裝免維護”的可靠性贏得了全世界的信賴。



## 連接越多，節省越多

高達 **40%** 節省材料和人力成本

應用我們的定製化總線匯流解決方案

高達 **80%** 縮短安裝時間

使用我們 MC4-EVO 2 & MC4-EVO READY 快速光伏連接器



# Popular Products for Solar PV

## DC SOLAR CABLE UL 4703 IEC 62930 EN 50618

ELECTRON BEAM CROSS-LINKED

PV DC STRING CABLE - SINGLE CORE



PV DC string cable - single core EN/IEC+UL					
Part No	Conductor Size (mm <sup>2</sup> )	Conductor Stranding (mm <sup>2</sup> )	Outer Diameter (mm)	Voltage Rating (V)	Conductor DC Resistance (Ω)
6351D	2.5mm <sup>2</sup> /14AWG	5.94±0.1 mm	47/0.25	1000	≤8.21mΩ/m
6352D	4mm <sup>2</sup> /12AWG	6.35±0.2 mm	52/0.30	1000	≤ 5.09 Ω/km
6352DB	4mm <sup>2</sup> /12AWG	6.35±0.2mm	56/0.30	1000	≤ 5.09 Ω/km
6353D	6mm <sup>2</sup> /10AWG	6.97±0.2 mm	78/0.30	1000	≤3.39mΩ/m
6354D	10mm <sup>2</sup> /8AWG	8.57±0.3 mm	77/0.40	1000	≤1.95mΩ/m



## SOLAR CONNECTOR

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GENUINE MC4 CONNECTOR SYSTEM



PV-KBT4 Range			
Female (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Cable OD clamping range (mm)	Current rating (A)
32.0010P0001	2.5	5.0~6.0	22.5
32.0014P0001	4~6	5.0~6.0	39
32.0142P0001	4~6	5.5~7.4	39
32.0016P0001	4~6	7.0~8.8	39
32.0034P0001	10	7.0~8.8	45



PV-KST4 Range			
Male (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Cable OD clamping range (mm)	Current rating (A)
32.0011P0001	2.5	5.0~6.0	22.5
32.0015P0001	4~6	5.0~6.0	39
32.0143P0001	4~6	5.5~7.4	39
32.0017P0001	4~6	7.0~8.8	39
32.0035P0001	10	7.0~8.8	45



PV-ADSP4 Range Male panel receptacle	
32.0077P0001	2.5mm <sup>2</sup> conductor
32.0079P0001	4-6mm <sup>2</sup> conductor
32.0151P0001	10mm <sup>2</sup> conductor
32.0507P0001	Plug pin



PV-ADBP4 Range Female panel receptacle	
32.0076P0001	2.5mm <sup>2</sup> conductor
32.0078P0001	4-6mm <sup>2</sup> conductor
32.0150P0001	10mm <sup>2</sup> conductor
32.0107P0001	Socket Pin

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# SOLAR CONNECTOR



## CABLE EXTENSIONS, WHIPS AND JUMPERS

GENUINE MC4 CONNECTORS, IEC 62930 TUV EN 50618 UL 4703 DC SOLAR CABLE



Preamsembled leads	4mm <sup>2</sup> leads	6mm <sup>2</sup> leads
1 metre	MC4.0FXL/EN/UL/100	MC6.0FXL/EN/UL/100
3 metre	MC4.0FXL/EN/UL/300	MC6.0FXL/EN/UL/300
5 metre	MC4.0FXL/EN/UL/500	MC6.0FXL/EN/UL/500
10 metre	MC4.0FXL/EN/UL/1000	MC6.0FXL/EN/UL/1000
12 metre	MC4.0FXL/EN/UL/1200	MC6.0FXL/EN/UL/1200
15 metre	MC4.0FXL/EN/UL/1500	MC6.0FXL/EN/UL/1500



A growing number of suspect copies of Stäubli's MC4 Solar components have recently appeared on the market. Stringent testing\* has revealed substantial deficiencies in quality resulting in compromised safety and impaired system performance.

\*A temperature increase test by the TÜV Rheinland with copied PV connectors from various manufacturers showed significant differences in higher temperature. This was in stark contrast to the excellent results of the MC4-PV connectors.

## GENUINE MC4-EVO 2 CONNECTOR SYSTEM



PV-KBT4-EVO 2 Range			
Female (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Cable OD clamping range (mm)	Current rating (A)
32.0316P0001	4~6	4.7~6.4	45~53
32.0318P0001	4~6	5.9~7.3	45~53
32.0320P0001	4~6	6.4~8.4	45~53
32.0324P0001	10	6.4~8.4	69



PV-KST4-EVO 2 Range			
Male (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Cable OD clamping range (mm)	Current rating (A)
32.0317P0001	4~6	4.7~6.4	45~53
32.0319P0001	4~6	5.9~7.3	45~53
32.0321P0001	4~6	6.4~8.4	45~53
32.0325P0001	10	6.4~8.4	69

## MC4-EVO 2 BRANCH PLUGS



PV-AZB-EVO 2 Branch socket	
32.0188	2 x Female - 1 x Male



PV-AZS-EVO 2 Branch plug	
32.00189	2 x Male - 1 x Female



PV-ADB4-EVO 2		
Female (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Current rating (A)
32.0346P0001	4-6mm <sup>2</sup> conductor	42A 4.0mm <sup>2</sup> 47A 6.0mm <sup>2</sup>
32.0352P0001	10mm <sup>2</sup> conductor	62A 10.0mm <sup>2</sup>
32.0121P0001	Socket pin	



PV-ADS4-EVO 2		
Male (socket) Cable Coupler	Conductor size (mm <sup>2</sup> )	Conductor size (mm <sup>2</sup> )
32.0347P0001	4-6mm <sup>2</sup> conductor	42A 4.0mm <sup>2</sup> 47A 6.0mm <sup>2</sup>
32.0353P0001	10mm <sup>2</sup> conductor	62A 10.0mm <sup>2</sup>
32.0521.P0001	Plug pin	

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## SOLAR CONNECTOR



### OPEN END SPANNER (PAIR)-MC4



Part No	Description
32.6024	PV-MS

### OPEN END SPANNER (PAIR)-MC4-EVO 2



Part No	Description
32.6058	PV-MS-PLS

### TEST PLUGS

#### TEST PLUG MC4



#### TEST PLUG MC4-EVO 2



### STRIPPING PLIERS



Stripping pliers	
Part No	Description
32.6027-156	PV-AZM-156
32.6027-410	PV-AZM-410

### CRIMP TOOL



MC4 & Evo 2 crimp tool (includes locator and insert)		
Part No	Crimping range	Connector system
32.6020-19100	2.5; 4; 6mm	MC4
32.6020-41100	2.5; 4; 6mm	MC4-Evo 2
32.6020-61100	2.5; 4; 6mm	MC4 & MC4-Evo 2
32.6020-61100	4; 6; 10mm	MC4 & MC4-Evo 2
32.6025	2.5; 4; 6mm	MC4

### SEALING CAPS

#### SEALING CAPS MC4, MC4-EVO 2



#### DUST CAP MC4, MC4-EVO 2



### PV-WZ TORQUE TOOL SET



Torque Tool Set	
Part No	Description
32.0065	PV-WZ-Torque-Set
32.6006	PV-WZ-AD/GWD
UZ1043	PV-WZ-DS/W
UZ1045	PV-WZ-AD-SW6.35/SQ12.7

### SETS & KITS



Sets & Kits	
Part No	Description
32.6126	PV-Installer Tool Case SET
32.0716	PV-BVK4
32.0717	PV-SVK4
32.6028	PV-PST
32.6073	PV-EVO-PST
32.6066	PV-MS-MC4-EVO 2
32.608 0	PV-WZ-KS
32.0065	PV-WZ-TORQUE-SET
32.6020-60100	PV-CZM-60100
32.6081	PV-LOC-MC4
32.6083	PV-LOC-MC4-Evo 2
32.6027-410	PV-AZM-410
32.6058	PV-MS-PLS

MC4 & MC4-Evo 2 SEALING CAPS	
Part No	Description
32.0716	Suits female
32.0717	Suits male
32.074	Suits female
32.0741	Suits male



## SOLAR CONNECTOR



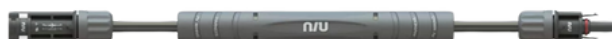
### IN-LINE FUSE ASSEMBLY

MC4-EVO 2 IN-LINE FUSE ASSEMBLY 1500V DC

MC4-Evo 2 In-Line-Fuse (PV-K/ILF3)				
Part No.	DC(V)	Lead length (cm)	Current rating (A)	Connector system
32.0329	1500	59	15	MC4-Evo 2
32.0330	1500	59	20	MC4-Evo 2



A6 B Mini Series Solar Inline Fuse				
Part No.	DC(V)	Lead length (cm)	Current rating (A)	Connector system
A6-B-Mini-1500-15	1500	46	15	MC4 or MC4-Evo 2
A6-B-Mini-1500-20	1500	46	20	MC4 or MC4-Evo 2
A6-B-Mini-1500-30	1500	46	30	MC4 or MC4-Evo 2



### IN-LINE FUSE REPLACEABLE

MC4-EVO 2 IN-LINE FUSE ASSEMBLY 1500V DC



1 用工具解鎖



2 兩端分離



3 更換保險絲



4 兩端對插鎖住

MC4-Evo 2 In-Line-Fuse				
Part No.	DC(V)	Lead length (cm)	Current rating (A)	Connector system
H1M1F15-0521	1500	50	20	MC4 or MC4-Evo 2

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## SOLAR CONNECTOR

**nUPower**

**STÄUBLI**

### SOLAR Y BRANCH HARNESS

MC4-EVO 2 Y-SPLITTER

MC4-Evo 2 Y-Splitter (PV-K/SPL-)				
Part No.	DC(V)	Lead length (cm)	Current rating (A)	Connector system
32.0333	1500	50	53	MC4-Evo 2
32.0334	1500	50	53	MC4-Evo 2

MC4-Evo 2 Y-Splitter (PV-K/SPL-)				
Part No.	DC(V)	Lead length (cm)	Current rating (A)	Connector system
NIP-H-Y-0606-2F1M	1500	45	50	MC4 & MC4-Evo 2
NIP-H-Y-0606-2M1F	1500	45	50	MC4 & MC4-Evo 2



### GENUINE MC4-EVO READY

## SOLAR ACCESSORIES

**PANDUIT™**

### CABLE CLIPS

LONG-LASTING, WIRE MANAGEMENT CLIPS



Part No.	Description	Part No.	Description	Part No.	Description
UCCAD-C130	Use to route wiring on the outside of the frame and perpendicular to the frame member. Includes lock pin.	UCCPD-C130	Use to route wiring on the outside of the frame and parallel to the frame member. Includes lock pin.	UCCPU-C130	Use to route wiring on the inside of the frame and parallel to the frame member. Includes lock pin.

### INSULATION PIERCING CONNECTORS

1500V DC / 1000V AC 4 IN 1 INSULATION PIERCING

**NSPV**

4 in 1 Insulation Piercing Connector			
Female (socket) Cable Coupler	Cable Cross Sections range (mm) Tap	Cable Cross Sections range (mm) Main	Rated Voltage (V)
IPC4116120	2.5~16.0mm	10~120mm	1500V DC 1000V AC



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## ABOUT I-POWERS

i-Powers is a leader in smart energy technology. We provide the smart energy products and solutions that power our lives and drive future progress

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