

太阳能连接器 H4 线端系列安装说明书手册



H4 太阳能线端连接器
H4 PV CABLE CONNECTOR

H4-H 太阳能线端连接器 H4-H
PV CABLE CONNECTOR

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1) 连接器在安装或拆卸过程中必须断开电源

The connector must be isolated and disconnected from the power supply during the assembling or disassembling process.

2) 不可带电插拔。

Do not connect or disconnect under load.

3) 推荐使用光伏电缆线。

The use of PV cable is recommended.

4) 推荐使用镀锡线芯线材。

The use of tin plated cable is recommended.

5) 安费诺连接器配合状态符合 IP68（水下 1 米一小时）密封性能。

The JH-COM connectors being mated are IP68 compliant in the function of sealing, and can be positioned for underwater 1 meter an hour

6) 该产品应由有相应资质或经过专家培训的、具备相关安全应用规范的专业人员安装。

The product may be assembled and installed only by suitably qualified and trained specialists with due observance of applicable safety regulations

7) 该连接器只适用于 B 类和 C 类的铜导线(参考 NFPA NEC 70 第 9 章, 表格 10)。如果与其他等级的铜导线使用, 连接器应做标记。参考电缆导体标准:

UL 486A–486B。

This connector is suitable for use only with Class B and C stranded copper conductors

(See NFPA NEC 70 chapter 9, Table 10)” If the connector is

found to be in use with other stranding classes, the connector shall be marked with the

specific class conductors. See the Standard for Wire Connectors,

UL 486A–486B

8) H4, H4–H 连接器沿其轴向可承受最小 $44L$ 拉力, 但是不能长时间施加外力在连接器上. 如图 1.1 所示。但不可使用如图 1.2 所示非连接器轴向力来拉连接器。

The H4, H4-H and Enlarge H4 can withstand the pull force 44Lb MINS. But can't apply external force on the connector for a long time. along the direction of picture 1 1.1 shows at the coupling interface. The force as shown in picture 1.2 shows is forbidden.

3.工具及应用
Tools & application

3.1)工具:
Required tools

机加工端子压接钳:
Crimp tool for cold forming contact
(2.5/4.0/6.0/10mm²端子)
(for 2.5/4/6/10mm² contact)



机加工端子钳口:
Crimping die for cold forming contact:
(2.5/4.0/6.0/10mm²端子)
(for 2.5/4/6/10mm² contact)



冲压端子压接钳:
Crimp tool for stamping forming contact:
(2.5/4.0/6.0mm²端子)
(for 2.5/4/6mm² contact)



冲压端子钳口:
Crimping die for stamping forming contact:
(2.5/4.0/6.0mm²端子)
(for 2.5/4/6mm² contact)



剥线钳 (2.5/4.0/6.0mm²光伏线) :
Strip tool for 2.5/4/6mm² PV cable



H4&H4-H连接器蓝色扳手:
Wrench tool for H4&H4-H Cable connector



端子深度探测工具
Contact depth inspection tool



H4&H4-H连接器套筒:
Open-end back cap spanner for H4&H4-H



母端防尘帽:
Female protect caps



工具箱:
Complete tool kit for installers



公端防尘帽:
Male protect caps



端子压接好后的效果见图3.3.6及图3.3.7。
See below pictures 3. 3.6 and 3.3.7 for crimping result.



图 3.3.6
Pictures 3.3.6



图 3.3.7
Pictures 3.3.7

3.4) 冲压端子压接流程:
Stamped and Formed contacts crimping process:

使用安费诺压接工具 (H4TC0003)压线时，首先将已剥好的线材线芯放入端子槽内，并确保所有线芯都在端子槽内，然后将要压接的端子放入压线钳钳口, 并对应正确的定位器孔位，小心不要伤到定位翅膀，见图 3.4.1至图3.4.5. 压接后端子电缆拔出力要求需要满足表3.4.1要求，
Amphenol specified crimp tool (H4TC0003) can be used in this step. Insert striped cable into contact barrel and Insure all conductor strands are captured in the contact barrel. Crimp contact barrel by using the crimping die, Be careful for not hurting the locator wings. See below pictures 3. 4.1 to 3.4.5. The pull-out force should meet below table 3.4.1 requirement.



图 3.4.1
Picture 3.4.1



图 3.4.2
Picture 3.4.2



图 3.4.3
Picture 3.4.3



图 3.4.4
Picture 3.4.4

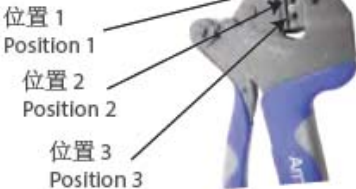


图 3.4.5
Picture 3.4.5

位置 Position	电缆规格 Cable size	电缆拔出力要求 Cable pull-out force
1	14AWG/2.5 mm ²	Min. 223 N
2	12AWG/4.0 mm ²	Min. 312 N
3	10AWG/6.0 mm ²	Min. 356 N

表格3.4.1
Table 3.4.1

端子压接好后的效果见图3.4.6及图3.4.7。
See below pictures 3.4.6 and 3.4.7 for crimping result.



图 3.4.6
Picture 3.4.6

定位翅膀(不可被压接)
Locator wings should not be crimped



图 3.4.7
Picture 3.4.7

端子压接好后的效果见图3.3.6及图3.3.7。
See below pictures 3. 3.6 and 3.3.7 for crimping result.



图 3.3.6
Pictures 3.3.6



图 3.3.7
Pictures 3.3.7

3.4) 冲压端子压接流程:
Stamped and Formed contacts crimping process:

使用安费诺压接工具 (H4TC0003)压线时，首先将已剥好的线材线芯放入端子槽内，并确保所有线芯都在端子槽内，然后将要压接的端子放入压线钳钳口, 并对应正确的定位器孔位，小心不要伤到定位翅膀，见图 3.4.1至图3.4.5。压接后端子电缆拔出力要求需要满足表3.4.1要求，
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图 3.4.1
Picture 3.4.1



图 3.4.2
Picture 3.4.2

位置 Position	电缆规格 Cable size	电缆拔出力要求 Cable pull-out force
1	14AWG/2.5 mm ²	Min. 223 N
2	12AWG/4.0 mm ²	Min. 312 N
3	10AWG/6.0 mm ²	Min. 356 N

表格3.4.1
Table 3.4.1



图 3.4.3
Picture 3.4.3



图 3.4.4
Picture 3.4.4

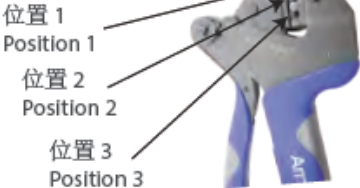


图 3.4.5
Picture 3.4.5

端子压接好后的效果见图3.4.6及图3.4.7。
See below pictures 3.4.6 and 3.4.7 for crimping result.



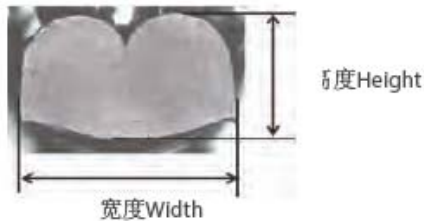
图 3.4.6
Picture 3.4.6

定位翅膀(不可被压接)
Locator wings should not be crimped



图 3.4.7
Picture 3.4.7

客户使用自动打端子机进行压接时, 建议的压接规范,
The customer wants to use the automatic crimping machine, we suggest that the contact crimping spec



电缆规格 Cable Size	铆接高度(A) Crimping Height(A)	铆接宽度(B) Crimping Width(B)
14AWG/2.5 mm ²	2.10mm REF	3.40mm REF
12AWG/4.0 mm ²	2.39mm REF	4.00mm REF
10AWG/6.0 mm ²	2.70mm REF	4.25mm REF
H/W Ratio(高度/宽度比率): 50%≤X≤75%		
Compression Ratio(压缩比率): 70%≤X≤90%		

表格3.4.2
Table 3.4.2

4. 组装流程:
Assembly process
4.1) 线端连接器安装
For Cable connector assembling
4.1.1) 压接端子及插线
Crimped contacts with cable

将已压接好的端子从连接器后端插入，当插到位后会听到“滴”的卡位声，端子插入后不可再拔出，(端子的压接方法及剥线请参考工具的应用3.2到3.4) 见下图4.1.1到图4.1.4。
Insert contact cable assembly into back of male and female connector. A “click” should be heard or felt when the contact cable assembly is seated in correct position. Contacts cannot be removed once seated (Contacts are crimped per tool application 3.2 to 3.4) See below pictures 4.1.1 to pictures4.1.4.

母端连接器
Female connector



图4.1.1
Picture 4.1.1



图4.1.2
Picture 4.1.2

公端连接器
Male Connector:



图4.1.3
Picture 4.1.3



图4.1.4
Picture 4.1.4

备注:
Notes:
可通过端子探测工具确认端子是否插到位。连接器边缘要落在端子深度探测工具白色区域内。见下图4.1.5到图4.1.7。
Can use the contact depth inspection tool confirm whether the contact is right seated or not. The edge of connector should locate within the white area of the contact depth inspection tool. See below picture 4.1.5 to 4.1.7.



连接器边需要在白色区域中间
Edge of connector should be
in the middle of white area.

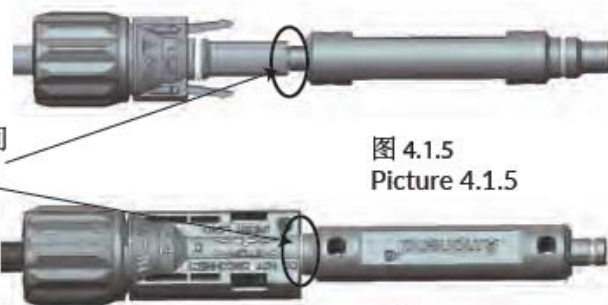


图 4.1.5
Picture 4.1.5

图 4.1.6
Picture 4.1.6

4.1.2) 锁紧螺帽

Tightening the back cap

H4及H4-H连接器锁紧螺帽的扭矩：2.6 N·m 到2.9 N·m。

H4 and H4-H connector back cap must be screwed up with a properly torque range 2.6 to 2.9 N·m.

在锁紧螺帽时，不论是使用帽子还是本体进行连接器组装都不会影响连接器的功能,客户可以根据自己的组装工艺选择组装方式。

Whether the connectors were screwed by cap or body, there is no any effect on the functionality. Customer can choose the different screwed method according to their manufacturing processes.

以下是连接器通过本体和帽子组装时的受力面，如图4.1.7

See the acting point when connector was screwed by body and cap, as below picture 4.1.7



图 4.1.7
Picture 4.1.7

客户在现场安装时，可使用安费诺蓝色扳手(H4 和 H4-H 使用 H4TW0001)组装连接器，如图 4.1.8 及图 4.1.9。

客户在现场安装时，可使用 JH-COM 蓝色扳手（H4 和 H4-H 使用 H4TW0001 ）组装连接器，如图 4.1.8 及图 4.1.9。

客户用扭力扳手组装连接器时，可使用 JH-COM 专用连接器套筒进行组装（H4 和 H4-H 使用 H4TTW100）。如图 4.1.10 及图 4.1.11

JH-COM specified wrench tool (H4TW0001 for H4&H4-H and H4TW0004 for Enlarge H4) can be used in this step See below picture 4.1.8 and 4.1.9.

Customer can use open-end back cap spanner (H4 use H4TTW100) if customer use

electric torque controlled wrench tool

to tighten the cap, as below picture 4.1.10 and 4.1.11



图 4.1.8
Picture 4.1.8



图 4.1.9
Picture 4.1.9



图 4.1.10
Picture 4.1.10



图 4.1.11
Picture 4.1.11

4.1.3) 备注: Notes:

- 1> H4及H4-H连接器线材外径要求为 $\varnothing 4.5\text{mm}$ 到 $\varnothing 7.8\text{mm}$ 。
The cable range of H4 and H4-H connector is from $\varnothing 4.5\text{mm}$ to $\varnothing 7.8\text{mm}$.
- 2> 适用H4及H4-H连接器导线的线芯数为7到140根。
The number of conductor strands for H4 and H4-H is from 7 to 140.
- 3> 扭矩要求只针对太阳能线材。不同的线材组装完成后都需达到IP68及拉力测试要求（无端子状态下吊重20Lb，一分钟）。
These torque force apply to Amphenol PV cable only. The cable assembly should pass IP68 and Pullout test (20Lb, 1Min, without contact).
- 4> 线材线芯只能用铜线芯。
A statement that the conductor type is limited to copper wire only ("Copper" or "CU" are acceptable).
- 5> 从2017年10月起，仅适用于EN50618认证的线缆。
From October 2017 Only valid in connection with cables certified according EN50618.

4.2) 连接器对插及解锁

Connector mating and un-mating

公端和母端连接器对插直到听到 “滴” 的卡位声说明对插到位 JH-COM H4 连接器符合 NEC 2008 690.33 标准, 所以需要工具进行解锁。

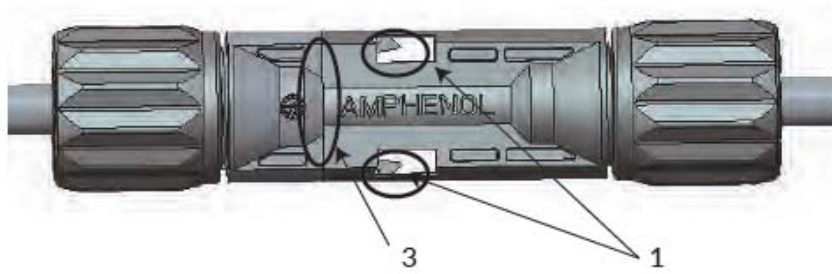
For mating, align the 2 half connectors and mate them together by hand until a “click” is heard and/or felt. For un-mating, since the JH-COM 1 H4 complies with the NEC 2008 690.33,

a tool is required to disconnect the connector once mated.

以下特征可以确认连接器是否对插到位:

Below feather can confirm the connector has been good mated or not:

1. 卡扣卡到位如下第一点。 / The latch was hookup as below point one.
2. 密封圈在外部不可看见。 / O-ring pressed inside and invisible.
3. 公头和母头之间仅可有小的间隙 (间隙 $\leq 0.3\text{mm}$) 。 / There is very small gap between the interface of male and female (gap $\leq 0.3\text{mm}$) .



JH-COM 提供蓝色扳手(H4TW0001)和解锁工具(H4TU0000)用于 JH-COM H4 系列连接器连接器的解锁, 如图 4.2.1 及图 4.2.2。

JH-COM specified wrench tool (H4TW0001) or Universal tool (H4TU0000) should be used in this step for H4 series. See below picture 4.2.1 and 4.2.2.

H4-H 连接器可直接用手打开。

The H4-H can be disconnected by hand.

图 4.2.1

Picture 4.2.1 图 4.2.2

Picture 4.2.2

万能解锁工具解锁

Universal Tool Disconnect

蓝色扳手解锁

Wrench Tool Disconnect

万能解锁工具解锁
Universal Tool Disconnect



图 4.2.1
Picture 4.2.1

蓝色扳手解锁
Wrench Tool Disconnect



图 4.2.2
Picture 4.2.2

连接器选型:

Connector order number:

How to Order a Connector (please choose one code per position, below)											
Product Line	Product Type	Gender	Connector Type	Cable Size		Certifications	Packaging		Contact Type		
H4 (H4 series)	C (Connector)	F Female	C Cable gland tool unlock	0	Without Contact	D Dual UL/TÜV Certified	I	1 pc/bag	S	S&F	
				2	2.5mm²/ 14AWG			C			100 pcs/bag
		M Male		4*	4.0mm²/12 AWG & 6.0mm²/10AWG(S&F) 4.0mm²/12AWG(CF)		M		400 pcs/bag	(Blank)	CF
				6	6.0mm²/ 10AWG						
				*When ordering a S&F contact, please use cable size order code "4" for both 4.0mm²/ 12AWG & 6.0mm²/ 10AWG							

卷装冲压端子选型:

Stamped and Formed contacts order number:

How to Order S&F contacts on Reels (please choose one code per position, below)							
Product Line	Product Type	Gender	Connector Type	Cable Size		Packaging	
H4 (H4 series)	F (S&F contact)	F Female	C Cable gland tool unlock	2	1.5mm²/ 16AWG & 2.5mm²/ 14AWG	R	2000pcs/reel
		4		4.0mm²/12 AWG & 6.0mm²/10AWG			
Note: if ording contacts in 2000pcs/reel version, need to order contact and plastic housing seperately. Contact's ordering code refers to this table, plastic housing should be chosen as H4CF0DM for female housing and H4CMC0DM for male housing.							

5. 电缆状态:
Cable routing

电缆根部建议保留20mm未折弯长度，以免因线缆折弯产生的外力引起连接器密封件变形. 如图5.1和图5.2。
In order to avoid the cable bend force lead to a visible deformation in the sealing portion of the insulation, the cable need keep at least 20mm straight length. See picture 5.1 and 5.2.

电缆最小弯曲半径请参考电缆生产厂商详细要求。
Refer to cable manufacturer's specification for minimum bending radius of cable.



图 5.1
Picture 5.1



图 5.2
Picture 5.2

6. 连接器对插前防尘保护:
connector dust protection before mating:

连接器安装过程中，如未能及时对插公母头连接器，需要用防尘帽（母头使用UTXPF，公头使用UTXPM）组装保护，以防止连接器内部被污染。如图6.1和图6.2。
In the process of connector assembly, the connect need be protected by dust cap (female end use UTXPF and male end use UTXPM) if connector can't be mated in time, so as to prevent the internal of connector be contaminated. See picture 6.1 and 6.2.



图 6.1
Picture 61



图 6.2
Picture 6.2

7. 存储注意事项:

Note on storage:

我们建议连接器零件的存储温度为-30℃~+60℃，相对湿度低于 70%。连接器零件不能暴露在因直接降雨、冷凝等带来的水汽中。确保零件不能与酸、碱、瓦斯、丙酮或者任何其他会影响材料使用的化学物质接触。如果以上条件得到满足，连接器的零件存储时间长达两年时间。

We recommend that you store connector components at temperature between -30℃ to +60℃ and with a relative humidity of less than 70%. The components must not be exposed to moisture due to direct rainfall, condensation, etc., Ensure that the individual components do not come into contact with acids, alkalis, gases, acetone or any other chemical substance that could impact the materials use. If these condition are met. The components can be stored for a maximum period of up to two years from the date of manufacture.

Final interpretation is owned by JH-COM

8. 注意事项:

请注意，有关第三方测试仅作为应用设计的参考，客户有责任自行验证在特殊应用及极端环境条件下的系统功能和连接器的耐久性， 我们建议客户在设计应用系统时，考虑预留充足安全系数，以避免高电流情况下引起产品过热失效。

Please be aware that this 3rd party laboratory test just as a reference for application design. It' s customer' s responsibility to validate system functions and connector durability at specific application

Lists of all known chemicals :
已知化学品清单如下表:

Classify分类	Chemical Name化学品名称
Commonly used chemicals 常用化学品	Grease 黄油、Lubricate oil 润滑油、Rust inhibitors防锈剂、Stamping oil冲压油、Engine Oil机油、Banana Oil天那水、WD40、Insecticide杀虫剂、Oily sealing agent油性封孔剂、Doduconta B25 Kontaktol、Evabrite S、Virex TB强氧化性消毒剂、Suma Lima L3餐具清洗剂、Suma Rinse、Detergent餐具清洗剂、Plasticizer增塑剂、Spray cleaner8188 喷头清洗剂8188、CM-31S 模具清洗剂
Grease 脂类	Molykote EM-50L(Dow Corning)、Molykote PG-641(Dow Corning)
Oils 油类	Die Cut(OELHELD), Machine Oil KV46(Nippon Oil)、Infeld stamping oil
Mould Release Agent 脱模剂	Pelicoat S-6(Chukyo-Kasei)
Binder 粘合剂	Chemlok(LORD)
Alcohols 醇类	Isopropyl alcohol(IPA)乙醇
Fatty hydrocarbons 脂肪族化合物	Heptane庚烷、Hexane己烷、Cyclohexane环己烷、Liquid paraffin液状石蜡
Acid,Alkali,Salt 酸碱类	Salt acid盐酸、Sulfuric acid 硫酸、Nitric acid硝酸、Phosphoric acid磷酸、Acetic acid醋酸、Ammonia氨气/氨水、Sodium hydroxide氢氧化钠
Halogenated hydrocarbon 族碳化合物	Freon氟利昂、Carbon tetrachloride四氯化碳、Trichloromethane氯仿/三氯化碳、Virex 256烷基二甲基氯化铵
Ketone 酮类	Acetone 丙酮、Methyl ethyl ketone 甲基乙基酮/丁酮
Aromatic Hydrocarbon 芳香族碳氢化合物	Toluene 甲苯、Xylene 二甲苯、Cresol 甲酚
Other, Organic solvent 其他/有机溶剂	Ethyl acetate乙酸乙酯、Butyl acetate乙酸丁酯、Tributyl phosphate磷酸三丁酯、Kerosene煤油、Gasoline汽油、Varnish清漆、Esters酯类、Ethers醚类、Amines胺类、Glacial acetic acid冰醋酸、Print ink添加剂、3M 稀释剂
Adhesion sealant 粘合密封材料	APF125(Wacker Chemical) 3M adhesive、Avancis adhesive
Potting Material 填充材料	KE-200(ShinEtsu)、CX-200(ShinEtsu)

Remarks: Chemicals not listed in the above table (other oils & chemicals in manufacturing process & in solar farm sites), it is the responsibility of user to validation such chemicals not affect our product performance.
备注: 对于不在此列表内的其他在生产制造过程和产品安装过程中可能接触或使用的化学品需用户自行确认对产品无影响后方可使用。

Contact :

Mr.Huang

Phone number :

13662603519

Support hotline :

0755-23063852

Fax : 0755-23063852

Company address : Building 10, Fourth Industrial Zone, Heshuikou, Gongming Street, Guangming New District, Shenzhen,
Guangdong, China

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