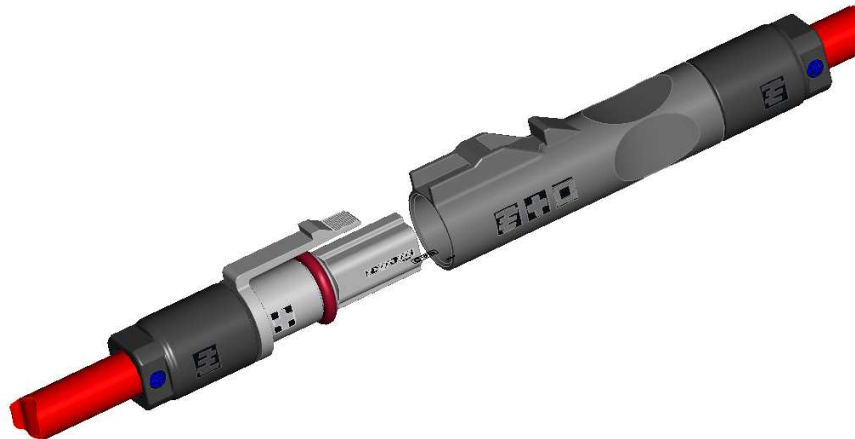

SOLARLOK* Connector
Slim Line



SOLAR

108-94205-1

SOLARLOK Connector*
Slim Line



Contents

1. SCOPE	3
1.1 Content	3
1.2 Qualification	3
2. APPLICABLE DOCUMENTS	3
2.1 TE Connectivity Documents	4
2.2 Other Documents	4
3. REQUIREMENTS	5
3.1 Design and Construction	5
3.2 Materials	5
3.3 Ratings	6
3.4 Performance and Test Description	6
3.5 Test Requirements and Procedures	7
3.6 Qualification and Requalification Test Sequences	10
4. QUALITY ASSURANCE PROVISIONS	12
4.1 Qualification Testing	12
4.2 Requalification Testing	13
4.3 Acceptance	13
4.4 Quality Conformance Inspection	13
5. CERTIFICATION	13

1. SCOPE

1.1 Content

This specification describes the features/properties, tests and quality requirements of the TE Connectivity SOLARLOK* Slim Line connector. (new generation) The plug connector is marked by polarity characters (+/-) and has, in order to ensure a better allocation, coding ribs. The cable-lateral pin plugs there are also in neutral execution (without polarity characters) before putting is absolutely to the correct polarity to be paid attention. With the screw connection, with which the cables are wedged and sealed, solar lines up to max. 6,8mm insulation diameter can be attached.

The plug connectors may not be separated/put under load.

They fulfill the newest requirements after EN 50521, IEC 61215 and IEC 61730.

1.2 Qualification

When tests are performed the following specified specifications and standards shall be used. All inspections shall be performed using the applicable product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. In the events of conflict between the requirements of this specification and the product drawing or of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 TE Connectivity Documents

A	Test Specification	109-18159
B	Appl. Specification	114-18952, 411-18535
C	Customer drawings	1987286, 1987287, 1987558, 1987559, 2120346, 2120347
D	Customer drawings cable assy with socket connector	1987592, 2120010 , 2120231, 2120025 , 2120229, 2120412
E	Customer drawings cable assy with pin connector	1987594, 2120000 , 2120229

2.2 Other Documents

A	DIN IEC 60512	Electromechanical components for electronic equipment, basic testing procedures and measuring methods Edition: 04.1995
B	DIN EN 60068-2-60	Environmental testing Part 2; Tests; Test Ke: Flowing mixed gas corrosion test Edition: EN 60068-2-60:1996
C	DIN IEC 60068-2-30	Environmental testing; Tests; Test Db and Guidance: Damp Heat, Cyclic (12+12-hour Cycle) Edition: EN 60068-2-30:1999
D	IEC 61215 ed 2	Crystalline silicon photovoltaic (PV) module Design qualification and type approval Edition: 2005-04
E	IEC 61730	Photovoltaic (PV) module safety qualification Edition: 2004-10
F	UL 1703	Flat-Plate PV Modules and Panels Edition: 2004-06
G	EN 50521	Steckverbinder für Photovoltaiksysteme Edition: 2008-11
H	UL 6703	Outline of investigation for Connectors for use in photovoltaic systems Edition: March 25, 2010

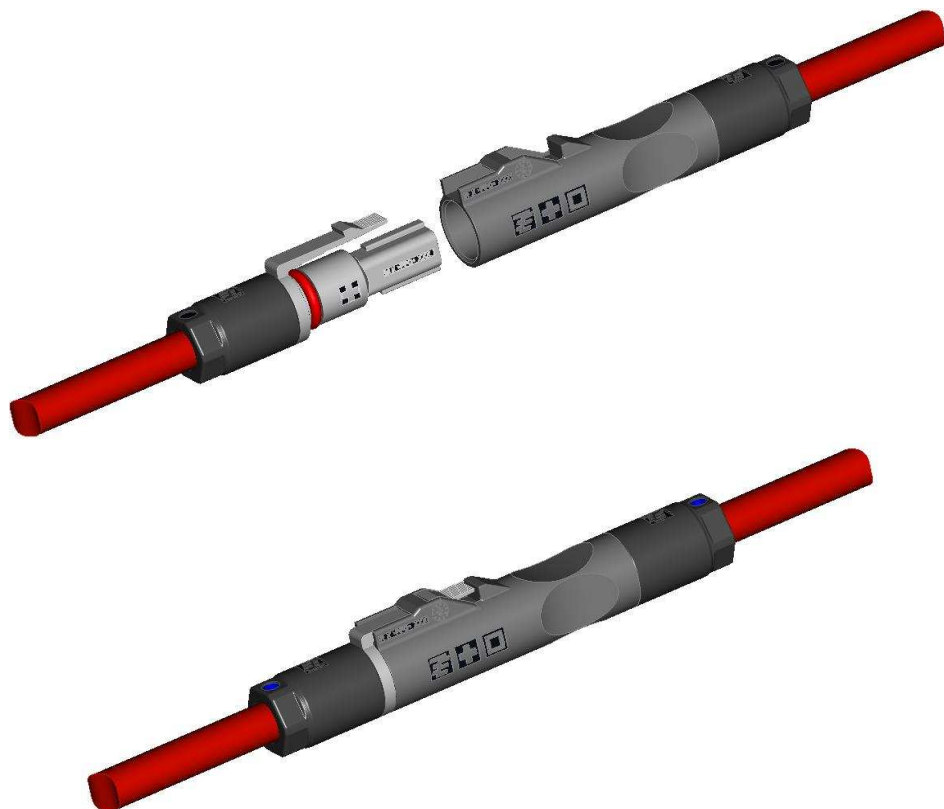
3. REQUIREMENTS

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable production drawing.

3.2 Materials

Descriptions for materials see drawings.



SOLARLOK* Slim Line connectors 1987286 and 1987287

3.3 Ratings

A	Rated voltage / (Pol-Pol-Ground)	1000 V
B	Current carrying capability See current carrying diagramm	25 A max. overall current
C	Operating temperature	-40°C ... +115°C * *) ambient temperature and heating up
D	Protection Class	II
E	IP Code	IP 67
F	Wire size	2.5sqmm / AWG14 or 4sqmm / AWG12
G	Wire-Insulation diameter	min. >6.3mm / max. 6.8mm (Pinch ring PN 1987285) or min. 5.8mm / max. 6.3mm (Pinch ring PN 2120242)
H	Dimension of the cable connector	Height:15.5mm, Width: 12.5mm

3.4 Performance and Test Description

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Para. 3.5.

3.5 Test Requirements and Procedures

Test Description	Requirement	Procedure according
GENERAL INSPECTIONS		
Visual- and dimensional examination	Meets requirements of product drawing	DIN IEC 60512-2, tests 1a and 1b
Durability of marking	No physical damage	DIN IEC 60068-2-70, test Xb
ELECTRICAL INSPECTIONS		
Voltage proof	No breakdown or flashover	EN 60512-4-1, test 4a 6kV _{AC} in connected status Testing time: 60 sec
Impulse withstand voltage	No breakdown or flashover	EN 50521, section 6.3.8 9,8kV (at sea level) in connected status
Measuring of resistance	Resistance $\leq 5\text{m}\Omega$ or deviation from initial to final value $\leq 50\%$	DIN IEC 60512-2, test 2b Test current: 1A
Insulation test	No dielectric breakdown or surface tracking Insulation resistance: $\geq 400\text{M}\Omega$ or $\geq 40\text{M}\Omega \cdot \text{m}^2$	IEC 61215, test 10.3 Test voltage: 3kV _{DC}
Wet leakage current test	Insulation resistance: $\geq 400\text{M}\Omega$ or $\geq 40\text{M}\Omega \cdot \text{m}^2$	IEC 61215, test 10.15 Test voltage: 1000V _{DC} Testing time: 2min.
Leakage current test	max. current: 1mA	UL1703, section 21 Test voltage: 600V _{DC}
Dielectric voltage withstand test	max. current 50 μ A _{DC}	UL1703, section 26 Test voltage: 2.2kV _{DC}
MECHANICAL INSPECTIONS		
Mating cycles	Mating and unmating of contacts No physical or functional damage	DIN IEC 60512, test: 9a 50 cycles Speed: 25mm/min

MECHANICAL INSPECTIONS		
Engaging- and separating forces of connector	Disconnect Min: 80N (speed 25mm/min)	DIN IEC 60512-8, test 15f
Polarization	Mating forces 80N No mating possible	DIN IEC 60512-7, test 13e
Accessibility test	Test finger 20N No contact with live parts permitted	DIN IEC 60529 In unconnected status
Resistance against cable torque	No physical or functional damage Permissible angle: 30°	DIN IEC 60512-9, test 17d test torque: 0.1Nm At unmated connector
Bending test	No physical damage	DIN EN 60309-1, test: 24.4 Bendings: 100 Test force: 20N
Breaktightening torque of the cable screw joint	≥ 4 Nm Tested with cable diameter 6.3 and 6.8mm (H+S and Tyco Electronics Solarcable)	DIN EN 50262, test 9.5
Strain relief	No functional damage	UL 1703, test 22 Test force: 89N Duration: 60 s
Mechanical strength impact	Dropping height: 750mm No physical damage	EN 50521, test A7 Dropping cycles:8 Positions in 45° steps
Mechanical stability at low temperature	4 hits with 1J impact energy No physical or functional damage	EN 50521, test A8 -40°C duration 5h
Impact test	No loss of electrical safety	UL1703, test 30 -35°C, duration 3h Impact energy: 6.78J
Crush resistance test	No functional damage No under-run of spacings No loss of electrical safety	UL746C, test 21 Test force: 45.4 kg Duration: 1 min.
Static heating sequence		UL486A-486B, section 9.3
Mechanical sequence		UL486A-486B, section 9.4
Contact retention in insert	No axial displacement likely to impair normal operation	EN 60512, test 15a

ENVIRONMENTAL INSPECTIONS		
Degrees of protection, IP Code	IP67	EN 60529
Dry heat	No physical damage	DIN IEC 60512-6, test 11i T =115°C Duration 1000 / 2000h
Damp heat	No physical damage	DIN IEC 60068-2-78 Test temp.: 85°C with 85% rel. Damp Duration: 1000 / 2000h
Temperature cycling test	No physical damage	DIN IEC 60068-2-14, test Nb Ta = -40°C Tb = +85°C tzyk = 30 min. t ₂ = ≤3 min. Number of cycles: 50
Temperature cycling test	No physical damage	DIN IEC 60068-2-14, test Nb Ta = -40°C Tb = +85°C tzyk = 30 min. t ₂ = ≤3 min. Number of cycles : 200
Temperature rise test (Derating)	I _{max} = 25A , T _{lim} = 115°C	DIN IEC 60512, test 5a / 5b
Industrial atmosphere	No physical damage	IEC 60068-2-60, test Ke/4 Test temp. 25°C with 75% rel. Damp duration: 21 days
Water spray test	Pre-conditioning for following tests	UL 1703, test 33
Humidity test	Pre-conditioning for following tests	UL 1703, test 36, IEC 61215, test 10.12 T = 85°C / -40°C with 85% rel. Damp Number of cycles: 10
Mold stress-relief distortion test	No functional damage	UL 746C, section 29 Test temp.: 125°C duration: 7h

3.6 Qualification and Requalification Test Sequences

Test	Test group ⁽¹⁾											
	A	B	C	D	E	F	G	H	I	J	K	L
	Test sequence ⁽²⁾											
Visual and dimensional examination	1, 3, 5	1, 4	1, 3	1, 3	1, 3	1, 3	1, 3	1, 4	1, 5	1, 4, 6, 10	1	
Durability of marking	2											
Voltage proof										8	4	
Impulse withstand voltage										7		
Measuring of resistance								2, 5	2, 6	2, 11		
Insulation test												
Wet leakage current test												
Leakage current test		5										1
Dielectric voltage withstand test												2
Mating cycles								3				
Force of connector, Polarization	4											
Accessibility test											2	
Resistance against cable torque			2									
Bending test								6				
Breaktightening torque			4									
Strain relief test		3										
Mechanical strength impact					2							
Mechanical stability at low temperature							2					
Impact test						2						
Crush resistance test												
Static heating sequence												
Mechanical sequence												
Contact retention				2								
IP Class (IP67)											3	
Dry heat									4			
Damp heat										5		
Temperature cycling test 50												
Temperature cycling test 200										3		
Temperature rise test									3			
Industrial atmosphere										9		
Water spray test												
Humidity test		2										
Mold stress-relief distortion test												

(1) See Para. 4.1 A

(2) Numbers indicate sequence in which tests are performed.

Test	Test group ⁽¹⁾											
	M	N	O	P	Q	R	S	T	U	V	W	X
	Test sequence ⁽²⁾											
Visual and dimensional examination					1, 3	1, 3, 5	1, 3	1, 3				
Durability of marking												
Voltage proof												
Impulse withstand voltage												
Measuring of resistance												
Insulation test	1											
Wet leakage current test	2, 5		4	5, 8					1, 3	1, 3		
Leakage current test		3	3	4, 7								
Dielectric voltage withstand test		2	2	3, 6								
Mating cycles												
Force of connector, Polarization												
Accessibility test												
Resistance against cable torque												
Bending test												
Breaktightening torque												
Strain relief test						4						
Mechanical strength impact												
Mechanical stability at low temperature												
Impact test												
Crush resistance test					2							
Static heating sequence							2					
Mechanical sequence								2				
Contact retention												
IP Class (IP67)												
Dry heat												
Damp heat										2		
Temperature cycling test 50	3											
Temperature cycling test 200			1						2			
Temperature rise test												
Industrial atmosphere												
Water spray test		1										
Humidity test	4			2								
Mold stress-relief distortion test						2						

(1) See Para. 4.1 A

(2) Numbers indicate sequence in which tests are performed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification Testing

A Sample selection

The samples shall be prepared in accordance with product drawings. They shall be selected at random from current production.

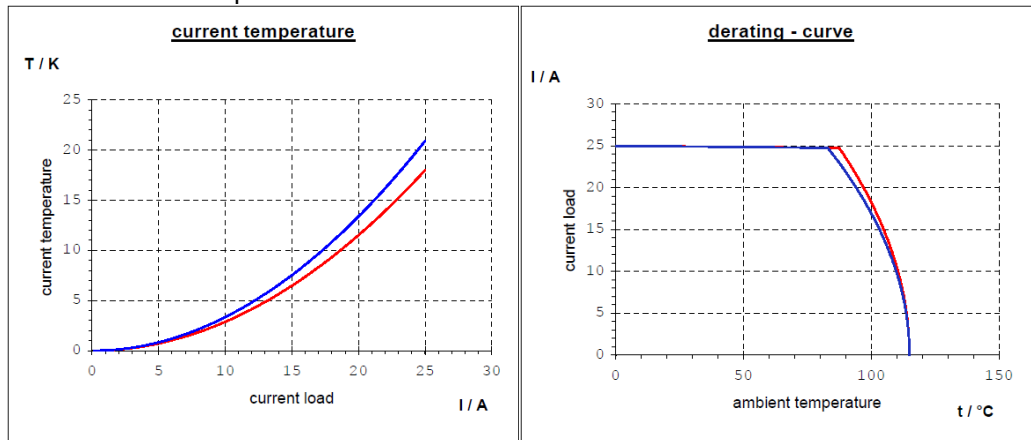
Test group A:	3	complete assemblies
Test group B:	10	complete assemblies
Test group C:	3	complete assemblies
Test group D:	3	assemblies: crimped contacts with connector housings
Test group E:	3	complete assemblies
Test group F:	3	complete assemblies
Test group G:	3	complete assemblies
Test group H:	3	complete assemblies
Test group I:	3	complete assemblies
Test group J:	3	complete assemblies
Test group K:	3	complete assemblies
Test group L:	3	complete assemblies
Test group M:	3	complete assemblies
Test group N:	3	complete assemblies
Test group O:	3	complete assemblies
Test group P:	3	complete assemblies
Test group Q:	3	complete assemblies
Test group R:	6	complete assemblies
Test group S:	4	complete assemblies
Test group T:	4	complete assemblies
Test group U:	4	complete assemblies
Test group V:	4	complete assemblies

B Test sequence

The samples shall be prepared in accordance with product drawings. They shall be selected at random from current production.

C Current carrying capacity

Connection line 4sqmm



4.2 Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

4.3 Acceptance

Acceptance is based on verification that the product meets the requirements of Para. 3.5. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4 Quality Conformance Inspection

The applicable TE Connectivity quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

5. CERTIFICATION

TUV certification see certificate no. R60033492.

See UL-File E226440.