中国认可
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检测
TESTING
CNAS L4595

TEST REPORT
IEC 61984
Connectors – Safety requirements and tests

Report Number .....:	LCSA12094230S
Date of issue .....:	2025-01-03
Total number of pages.....:	44 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen LCS Compliance Testing Laboratory Ltd. Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Applicant's name.....:	SHENZHEN CAZN ELECTRONIC CO., LTD
Address .....:	Building A, Jinruihua Industrial zone, Jinlong 12rd Road, Huarong Community, Dalang Street, Longhua District, Shenzhen City China
Test specification:	
Standard .....:	IEC 61984:2008
Test procedure.....:	Type test
Non-standard test method.....:	N/A
Test Report Form No.....:	TRF-4-S-089 A/0
Test Report Form(s) Originator.....:	VDE Prüf- und Zertifizierungsinstitut GmbH
Master TRF .....:	Dated 2017-06

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Test item description .....:	M12 Assembled Plug
Trade Mark .....:	CAZN
Manufacturer.....:	Same as the Applicant
Model/Type reference .....:	See model list
Ratings .....:	See model list

Testing procedure and testing location:		
Testing Laboratory:	Shenzhen LCS Compliance Testing Laboratory Ltd.	
Testing location/ address ..... :	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China	
Tested by..... :	Rick Guo / Test engineer	Rick Guo
Checked by ..... :	Tim Liu / Project engineer	Tim Liu
Approved by..... :	Hart Qiu / Technical manager	Hart Qiu

List of Attachments (including a total number of pages in each attachment):
Attachment No.1: Photo documentation (2 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were found to comply with the requirements of: ➢ Electrical safety IEC 61984:2008; EN 61984:2009	Shenzhen LCS Compliance Testing Laboratory Ltd. Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Summary of compliance with National Differences (List of countries addressed):

Copy of marking plate:

The artwork below may be only a draft.

N/A

Remark:

1. The height dimension of CE mark should not less than 5mm.

3. Name and address of the Importer and Manufacturer must be affixed on the product when the product placed on the EU market.

Test item particulars .....:	Connector
Classification of installation and use .....:	Screw terminal
Supply Connection .....:	Rewirable connector
.....:	
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement .....:	P (Pass)
- test object does not meet the requirement .....:	F (Fail)
Testing .....:	
Date of receipt of test item.....:	2024-12-16
Date (s) of performance of tests .....:	From 2024-12-16 to 2025-01-02

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)……..: Same as the Applicant

General product information and other remarks:

1. The M12-P4A-PLA-1T2 represent all models for tested. Additional to Temperature rise test for M12-P5A-PLAP9 and M12-P5A-GLAP9.
2. Model list

Model name	description	ratings
M12-P2A-GLAP7	Straight pin type metal assembly plug, 2 pin	4A 250V
M12-P3A-GLAP7	Straight pin type metal assembly plug, 3 pin	4A 250V
M12-P4A-GLAP7	Straight pin type metal assembly plug, 4 pin	4A 250V
M12-P4D-GLAP7	Straight pin type metal assembly plug, 4 pin	4A 250V
M12-P5A-GLAP7	Straight pin type metal assembly plug, 5 pin	4A 60V
M12-P5B-GLAP7	Straight pin type metal assembly plug, 5 pin	4A 60V
M12-P2A-GLAP9	Straight pin type metal assembly plug, 2 pin	4A 250V
M12-P3A-GLAP9	Straight pin type metal assembly plug, 3 pin	4A 250V

M12-P4A-GLAP9	Straight pin type metal assembly plug, 4 pin	4A 250V
M12-P4D-GLAP9	Straight pin type metal assembly plug, 4 pin	4A 250V
M12-P5A-GLAP9	Straight pin type metal assembly plug, 5 pin	4A 60V
M12-P5B-GLAP9	Straight pin type metal assembly plug, 5 pin	4A 60V
M12-S2A-GLAP7	Straight pass metal assembly plug, 2 pin	4A 250V
M12-S3A-GLAP7	Straight pass metal assembly plug, 3 pin	4A 250V
M12-S4A-GLAP7	Straight pass metal assembly plug, 4 pin	4A 250V
M12-S4D-GLAP7	Straight pass metal assembly plug, 4 pin	4A 250V
M12-S5A-GLAP7	Straight pass metal assembly plug, 5 pin	4A 60V
M12-S5B-GLAP7	Straight pass metal assembly plug, 5 pin	4A 60V
M12-S2A-GLAP9	Straight pass metal assembly plug, 2 pin	4A 250V
M12-S3A-GLAP9	Straight pass metal assembly plug, 3 pin	4A 250V
M12-S4A-GLAP9	Straight pass metal assembly plug, 4 pin	4A 250V
M12-S4D-GLAP9	Straight pass metal assembly plug, 4 pin	4A 250V
M12-S5A-GLAP9	Straight pass metal assembly plug, 5 pin	4A 60V
M12-S5B-GLAP9	Straight pass metal assembly plug, 5 pin	4A 60V
M12-P2A-GLDP7	Bent pin metal assembly plug, 2 pin	4A 250V
M12-P3A-GLDP7	Bent pin metal assembly plug, 3 pin	4A 250V
M12-P4A-GLDP7	Bent pin metal assembly plug, 4 pin	4A 250V
M12-P4D-GLDP7	Bent pin metal assembly plug, 4 pin	4A 250V
M12-P5A-GLDP7	Bent pin metal assembly plug, 5 pin	4A 60V
M12-P5B-GLDP7	Bent pin metal assembly plug, 5 pin	4A 60V
M12-P2A-GLDP9	Bent pin metal assembly plug, 2 pin	4A 250V
M12-P3A-GLDP9	Bent pin metal assembly plug, 3 pin	4A 250V
M12-P4A-GLDP9	Bent pin metal assembly plug, 4 pin	4A 250V
M12-P4D-GLDP9	Bent pin metal assembly plug, 4 pin	4A 250V
M12-P5A-GLDP9	Bent pin metal assembly plug, 5 pin	4A 60V
M12-P5B-GLDP9	Bent pin metal assembly plug, 5 pin	4A 60V
M12-S2A-GLDP7	Bent pin metal assembly plug, 2 pin	4A 250V
M12-S3A-GLDP7	Bent pin metal assembly plug, 3 pin	4A 250V
M12-S4A-GLDP7	Bent pin metal assembly plug, 4 pin	4A 250V
M12-S4D-GLDP7	Bent pin metal assembly plug, 4 pin	4A 250V
M12-S5A-GLDP7	Bent pin metal assembly plug, 5 pin	4A 60V
M12-S5B-GLDP7	Bent pin metal assembly plug, 5 pin	4A 60V
M12-S2A-GLDP9	Bent pin metal assembly plug, 2 pin	4A 250V
M12-S3A-GLDP9	Bent pin metal assembly plug, 3 pin	4A 250V
M12-S4A-GLDP9	Bent pin metal assembly plug, 4 pin	4A 250V
M12-S4D-GLDP9	Bent pin metal assembly plug, 4 pin	4A 250V
M12-S5A-GLDP9	Bent pin metal assembly plug, 5 pin	4A 60V
M12-S5B-GLDP9	Bent pin metal assembly plug, 2 pin	4A 60V
M12-P2A-PLAP7	Straight pin type plastic assembly plug, 2 pin	4A 250V
M12-P3A-PLAP7	Straight pin type plastic assembly plug, 3 pin	4A 250V
M12-P4A-PLAP7	Straight pin type plastic assembly plug, 4 pin	4A 250V
M12-P4B-PLAP7	Straight pin type plastic assembly plug, 4 pin	4A 250V
M12-P4D-PLAP7	Straight pin type plastic assembly plug, 4 pin	4A 250V

M12-P5A-PLAP7	Straight pin type plastic assembly plug, 5 pin	4A 60V
M12-P5B-PLAP7	Straight pin type plastic assembly plug, 5 pin	4A 60V
M12-P5D-PLAP7	Straight pin type plastic assembly plug, 5 pin	4A 60V
M12-P2A-PLAP9	Straight pin type plastic assembly plug, 2 pin	4A 250V
M12-P3A-PLAP9	Straight pin type plastic assembly plug, 3 pin	4A 250V
M12-P4A-PLAP9	Straight pin type plastic assembly plug, 4 pin	4A 250V
M12-P4B-PLAP9	Straight pin type plastic assembly plug, 4 pin	4A 250V
M12-P4D-PLAP9	Straight pin type plastic assembly plug, 4 pin	4A 250V
M12-P5A-PLAP9	Straight pin type plastic assembly plug, 5 pin	4A 60V
M12-P5B-PLAP9	Straight pin type plastic assembly plug, 5 pin	4A 60V
M12-P5D-PLAP9	Straight pin type plastic assembly plug, 4 pin	4A 60V
M12-S2A-PLAP7	Straight pass plastic assembly plug, 2 pin	4A 250V
M12-S3A-PLAP7	Straight pass plastic assembly plug, 3 pin	4A 250V
M12-S4A-PLAP7	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S4B-PLAP7	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S4D-PLAP7	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S5A-PLAP7	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-S5B-PLAP7	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-S5D-PLAP7	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-S2A-PLAP9	Straight pass plastic assembly plug, 2 pin	4A 250V
M12-S3A-PLAP9	Straight pass plastic assembly plug, 3 pin	4A 250V
M12-S4A-PLAP9	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S4B-PLAP9	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S4D-PLAP9	Straight pass plastic assembly plug, 4 pin	4A 250V
M12-S5A-PLAP9	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-S5B-PLAP9	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-S5D-PLAP9	Straight pass plastic assembly plug, 5 pin	4A 60V
M12-P2A-PLDP7	Bent pin type plastic assembly plug, 2 pin	4A 250V
M12-P3A-PLDP7	Bent pin type plastic assembly plug, 3 pin	4A 250V
M12-P4A-PLDP7	Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P4B-PLDP7	Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P4D-PLDP7	Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P5A-PLDP7	Bent pin type plastic assembly plug, 5 pin	4A 60V
M12-P5B-PLDP7	Bent pin type plastic assembly plug, 5 pin	4A 60V
M12-P5D-PLDP7	Bent pin type plastic assembly plug, 5 pin	4A 60V
M12-P2A-PLDP9	Bent pin type plastic assembly plug, 2 pin	4A 250V
M12-P3A-PLDP9	Bent pin type plastic assembly plug, 3 pin	4A 250V
M12-P4A-PLDP9	Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P4B-PLDP9	M Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P4D-PLDP9	Bent pin type plastic assembly plug, 4 pin	4A 250V
M12-P5A-PLDP9	Bent pin type plastic assembly plug, 5 pin	4A 60V
M12-P5B-PLDP9	Bent pin type plastic assembly plug, 5 pin	4A 60V
M12-P5D-PLDP9	Bent pin type plastic assembly plug, 4 pin	4A 60V
M12-S2A-PLDP7	Plastic assembly plug with curved pass, 2 pin	4A 250V
M12-S3A-PLDP7	Plastic assembly plug with curved pass, 3 pin	4A 250V

M12-S4A-PLDP7	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S4B-PLDP7	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S4D-PLDP7	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S5A-PLDP7	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-S5B-PLDP7	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-S5D-PLDP7	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-S2A-PLDP9	Plastic assembly plug with curved pass, 2 pin	4A 250V	
M12-S3A-PLDP9	Plastic assembly plug with curved pass, 3 pin	4A 250V	
M12-S4A-PLDP9	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S4B-PLDP9	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S4D-PLDP9	Plastic assembly plug with curved pass, 4 pin	4A 250V	
M12-S5A-PLDP9	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-S5B-PLDP9	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-S5D-PLDP9	Plastic assembly plug with curved pass, 5 pin	4A 60V	
M12-P4A-PLA-1T2	Straight pin type plastic assembly plug, 4 pin	4A 250V	

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Clause	Requirement + Test	Result - Remark	Verdict
	MECHANICAL TEST GROUP A (TABLE 10)		P
A1	VISUAL EXAMINATION: IEC 60512 Test 1a		P
6.2.2	Marking indelible and easily legible		P
	Minimum marking on the connector a) trademark		N/A
	Markings a) trademark and b) type identification on smallest unit of packaging		P
	All other markings (c – k) given in the technical documentation or catalogue of the manufacturer		P
	c) Rated current .....:		P
	c) Rated voltage .....:		P
	e) Over voltage category .....:		P
	f) Pollution degree .....:		P
	g) Protection degree .....:		P
	h) Range of temperature .....:		P
	i) Type of terminals .....:	Screw terminal	P
	j) Connectable conductors .....:		N/A
	k) Reference to this standard or to the DS		P
6.2.3	Position for the contacts and protective earthing contacts clearly indicated. Marking of protective earthing contacts applies symbol ⏚ or “PE”. This requirement is not necessary for non rewirable connectors.		N/A
6.9.2	Fixing means not used to fix live parts.		P
6.9.3	Termination without damage possible.		P
6.10	CBC has adequate breaking capacity.		N/A
6.11	Free connector: Wires protected against shear and tensile stress at the termination and secured to prevent twisting.		N/A
	The above requirement does not apply to:		N/A
	a) free connectors for termination to cables in fixed mountings (plug connection in the sense of a detachable connection)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) free connectors in which the terminations are protected against pull and twisting by mounting provisions in the end-use product		N/A
	DIMENSIONAL EXAMINATION: IEC 60512		P
6.19	Clearances and creepage distances according to IEC 60664.	see table 0.2	N/A
	Connector dimensions comply with the DS or manufacturer's specification.		P
A2	DURABILITY OF MARKING		N/A
7.3.2	Test liquid: water Test piston size 1; force 5 N; 10 cycles IEC 60068-2-70 Test Xb „Abrasion of marking“		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
	Visible with the naked eye		N/A
A3	POLARISATION AND CODING: IEC 60512 / Test [13e]		P
	- For unenclosed connectors (internal connections) 20 N		N/A
	- For enclosed connectors (external connections) 1,5 x mating force, but not higher than 80 N	20N	P
6.3	Multipole connector: Contact between protective earthing contacts and live contacts is not possible by engagement.		N/A
6.9.1	Multipole connector: Polarisation prevents improper connection of mating parts.		P
	VISUAL EXAMINATION: IEC 60512 Test 1a		P
	No damage likely to impair function		P
A4	PROVISIONS FOR EARTHING		N/A
6.5.1	For a CBC the earthing contact is a “first make - last break” contact.		N/A
7.3.3	No electrical contact indication between earth contact and the other contacts.		N/A
6.5.4	CONNECTION OF THE PROTECTIVE EARTH CONNECTOR		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Remove any available covers if required.		N/A
6.5.4.1	The protective conductor terminal accepts a conductor with a minimum cross-section as specified in Table 1, Column 2:		N/A
	Minimum cross- section according to Table 1.....:		—
6.5.4.2	With regard to design and type of construction, the protective conductor terminations are at least equivalent to the other terminations according to clause 6.:		N/A
A5	INTERLOCK		N/A
7.3.4	The specimens are engaged by hand over their full engagement distance. All other contacts are wired in series. The interlock contacts “make last and break first”, before any other contact does.		N/A
6.7	The connector with an interlock cannot be engaged or disengaged as long as the contacts are live.		N/A
A6	TERMINATIONS		P
6.6	Range of connectable conductor(s) .....:		—
6.6.1 a)	Test acc. to: IEC 60352-1 Wrapped connections		N/A
6.6.1 b)	Test acc. to: IEC 60352-2 Crimped connections		P
6.6.1 c)	Test acc. to: IEC 60352-3 or IEC 60998-2-3 Accessible insulation displacement connections		N/A
6.6.1 d)	Test acc. to: IEC 60352-4 or IEC 60998-2-3 Non-accessible insulation displacement connections		N/A
6.6.1 e)	Test acc. to: IEC 60352-5 Press-in connections		N/A
6.6.1 f)	Test acc. to: IEC 60352-6 or IEC 60998-2-3 Insulation piercing connections		N/A
6.6.1 g)	Test acc. to: IEC 60999-1 or IEC 60999-2 or IEC 60352-7 Screwless-type clamping units		N/A
6.6.1 h)	Test acc. to: IEC 60999-1 or IEC 60999-2 Screw-type clamping units		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.6.1 i)	Test acc. to: IEC 60760 or IEC 61210 Flat, quick-connect terminations		N/A
	Test acc. to: IEC 60068-2-20 Solder terminations		N/A
	Other terminations, not mentioned above, acc. to IEC standard .....:		N/A
A7	CONTACT RETENTION IN INSERT: IEC 60512 Test 15a		P
	Test load shall be three times the specified insertion force (mating) of one contact or the specified insertion force of one contact plus 50 N, whichever is less. Minimum test load 20 N.	20N	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		P
6.18.2	Contacts safety retained		P
	No axial displacement likely to impair normal operation		P
A8	CABLE CLAMP: IEC 60512		P
6.17	The cable clamp is made of insulating material or metal.	Insulating material	P
6.17	Metal cable clamps meet one of the following requirements:		N/A
	a) Provided with a covering of insulating material to prevent any accessible metal part becoming live in case of a fault.		N/A
	b) No contact possible with the IEC test finger according to IEC 60529.		N/A
	c) Be connected to protective earth.		N/A
	Cable clamping range (6.17 Table 6 or manufacturer's specification) .....:		—
A8.1	CABLE CLAMP (PULL) IEC 60512 Test 17c		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
	Covers mounted / contacts not connected	See appended table A8.1	N/A
A8.2	CABLE CLAMP (TORSION): IEC 60512 Test 17d		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
	Covers mounted	See appended table A8.2	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A9	MECHANICAL STRENGTH IMPACT (Only free Connectors and CBC): IEC 60512 Test 7b		P
	Dropping cycles: 8 positions in 45° steps		—
	Dropping height .....:	750mm	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		P
6.18.1	No damage likely to impair safety		P
6.18.3	Internal insulations not damaged		P
	Parts against electric shock not damaged		P
	Clearances and creepage distances not reduced		P
	SERVICE LIFE TEST GROUP B (TABLE 11)		N/A
B1	INITIAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b		N/A
	Reference value for subsequent measurement:	See appended table B1	—
	Test current .....:	4A	—
B2	BREAKING CAPACITY (ONLY FOR CBCs)		N/A
7.3.5	Operating cycles .....:		—
	Speed of insertion/ withdrawal .....:		—
	Test voltage .....:		—
	Test current .....:		—
	Power factor / cos(φ) .....:		—
	Time constant		—
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
6.14.2	No damage occurred, which could impair normal use		N/A
B3	MECHANICAL OPERATIONS: IEC 60512 Test 9a		N/A
7.3.9	Operating cycles .....:		—
	Insertion speed .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Rest .....:		—
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
6.14.1	No damage occurred, which could impair normal use		N/A

B4	FINAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b		N/A
	Test current .....:		—
	R2 ≤ 1.5 R1 or R2 ≤ 5 mΩ + R1.....:	See appended table B4.1	N/A
	DIELECTRIC STRENGTH: IEC 60512 Test 4a		N/A
	a) Impulse withstand voltage .....:		—
	b) r.m.s. withstand voltage .....:		—
6.13	No breakdown or flashover occurred	See appended table B4.2	N/A

B5	BENDING (FLEXING) TEST (To be performed on new specimen)		N/A
7.3.10	Only non-rewirable connectors		N/A
	Rated current .....:		—
	Rated voltage .....:		—
	Wire cross section .....:		—
	Load: > 0,75 mm² / 20 N ; ≤ 0,75 mm² / 10 N		—
	Numbers of bending .....:		—
	DURING THE TEST		N/A
	No interruption of the test current		N/A
	No short-circuit between the conductors		N/A
	AFTER THE TEST		N/A
	Cable support sleeve not loosened from the body		N/A
	Insulation shows no signs of abrasion or of wear and tear.		N/A
	Broken strands do not pierce the insulation.		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
6.14.3	No damage occurs, which could impair normal use.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	THERMAL TEST GROUP C (TABLE 12)		P
C1	TEMPERATURE RISE TEST: IEC 60512 Test 5A		P
	Test conductor length according Table 7.....:	150 mm	—
	Test conductor cross-section .....:	0.5mm²	—
7.3.8	Mated specimen .....:	2	—
	Test current .....:	4A	—
	Ambient temperature – components .....:	25 °C	—
	Upper limit temperature – components .....:	85 °C	—
6.16	The upper limiting temperature specified for the specimen is not exceeded	See appended table C1	P
	CLIMATIC TEST GROUP D (TABLE 13)		N/A
D1	INITIAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b		N/A
	Reference value for subsequent measurement..:	See appended table D1	—
	Test current .....:		—
D2	COLD: IEC 60512 Test 11j		P
	Mated specimen .....:		—
	Test duration .....:	2 h	—
	Lower temperature limit .....:	0°C	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		P
6.6.3	Sufficient contact pressure through insulation		P
6.8 / 6.15	No visual damage, no cracks on insulations parts likely to impair safety		P
6.18.3	Internal insulation shows no damage likely to impair safety		P
	No damage occurred, which could impair normal use		P

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict
D3	DRY HEAT: IEC 60512 Test 11i		P
	Mated specimen.....:		—
	Test duration .....:	7 days	—
	Upper temperature limit .....:	70 °C	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		P
6.6.3	Sufficient contact pressure through insulation		P
6.8 / 6.15	No visual damage, no cracks on insulations parts likely to impair safety		P
6.18.3	Internal insulation shows no damage likely to impair safety		P
	No damage occurred, which could impair normal use		P
D4	PROTECTION AGAINST CORROSION: IEC 60512 Test 11g		N/A
7.3.14 Test 1	Flowing mixed gas corrosion according to IEC 60512-11-7, test 11g Method 1 or alternatively Method 4 (Table 1 of IEC 60512-11-7)). Test duration is 4 days.		N/A
7.3.14 Test 2 alternative	Sulphur dioxide test with general condensation of moisture according to ISO 6988 . Test duration is 24h (1 test cycle)		N/A
	VISUAL EXAMINATION: IEC 60512 Test 1a		N/A
6.21	Function guaranteed		N/A
	No damage occurred, which could impair normal use		N/A
D5	FINAL MEASUREMENT (CONTACT RESISTANCE): IEC 60512 Test 2b		N/A
	Test current .....:		—
	R2 ≤ 1,5 R1 or R2 ≤ 5 mΩ + R1 .....:	See appended table D5	N/A

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict
D6	DIELECTRIC STRENGTH: IEC 60512 Test 4a		P
	Mated specimen .....:		—
	Impulse withstand voltage .....:	2.95KV	—
	r.m.s. withstand voltage .....:	1.39KV	—
6.13	No breakdown or flashover occurred	See appended table D6	P

	DEGREE OF PROTECTION TEST GROUP E (TABLE 14)		P
E1	PROTECTION AGAINST ELECTRIC SHOCK		P
	Unenclosed connectors (for use inside an enclosure):		N/A
	5.4 c1) COC classified as IP0X, no test required		N/A
6.4.2.2	5.4 c2) COC Hand back safety (IP1X or IPXXA) 50 mm sphere pressed with 20 N against mated specimen. No live parts accessible.		N/A
6.4.2.3	5.4 c3) COC Finger safety (IP2X or IPXXB) Jointed test finger pressed with 20 N against mated specimen. No live parts accessible.		N/A
6.4.2.3	5.4 d) CBC finger safety (IP2X or IPXXB) Jointed test finger pressed with 20 N against mated and unmated specimen. No live parts accessible.		N/A
	Enclosed connectors (COCs and CBCs)		N/A
6.4.1	Test at mated and unmated specimen. Jointed IEC test finger pressed with 20 N against the surface except the mating face of the male part of the connector. Creepages and clearances ensured between live parts and test finger.		N/A
	All parts necessary to ensure protection against electric shock only removable with a tool.		N/A
6.4.3	For a CBC, protection against electric shock is ensured also during insertion and withdrawal. This is proved by use of the jointed IEC test with a test force of 20 N. Creepages and clearances ensured between live parts and test finger.		N/A

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

E2	PROVISION FOR EARTHING		N/A
7.3.13 6.5.3	Resistance between accessible metal parts and the earthing contact ≤ 100 mΩ.....:		N/A

E3	DEGREE OF PROTECTION IP CODE: IEC 60529		N/A
7.3.6.3	Tests for IP Codes higher than IP2X or IPXXB		N/A
6.12 7.3.7.1	IP code according to IEC 60529 in mated condition or according manufacturers conditions.....:		—
	Maximum and minimum cross-section wiring or cable diameter connected.....:		—
7.3.7.2	Protection against ingress of foreign solid objects, tested according to IEC 60529		N/A
7.3.7.3	Protection against harmful ingress of water, tested according to IEC 60529		N/A

A8.1	**TABLE: Covers mounted / contacts not connected**				N/A
Nominal size (mm):	∅ [mm]		Tensible force [N]	Displacement [mm]	—
	Min.			≤ 3	
	Max.				

A8.2	**TABLE: Covers mounted**				N/A
Nominal size (mm):	∅ [mm]		Torque [Nm]	Twist [°]	—
	Min.			≤ ±30	
	Max.				

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B1	TABLE: Initial measurements (Contact resistance)					N/A
Test current ..... :						—
Test sample	Contact	1	2	3	PE	—
1	ΔU1 [mV]	--	--	--	--	--
	R1 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	
2	ΔU1 [mV]	--	--	--	--	--
	R1 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	
3	ΔU1 [mV]	--	--	--	--	--
	R1 [mΩ]	--	--	--	--	

B4.1	TABLE: Final measurements (Contact resistance)					N/A
Test current..... :						—
Number of cycles ..... :						—
Condition..... :				R2max ≤ 1.5R1 or R2max ≤ 5 mΩ + R1		—
Test sample	Contact	1	2	3	PE	—
1	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	—
2	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	—
3	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
Test current..... :						—
Number of cycles ..... :						—
Condition..... :				R2max ≤ 1.5R1 or R2max ≤ 5 mΩ + R1		—
Test sample	Contact	1	2	3	PE	—

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

1	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	—
2	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
	Contact	1	2	3	PE	—
3	R2max [mΩ]	--	--	--	--	--
	ΔU2 [mV]	--	--	--	--	
	R2 [mΩ]	--	--	--	--	
supplementary information:						

C1	**TABLE: Temperature rise test**			P
	Ambient temperature (°C) .....:			—
Thermocouple Locations	Test current (A)	Upper temperature limit (ULT) (°C)	Temperature rise measured (K)	—
Pin	4	85	20.3	
Accessible metal parts	4	85	13.5	
supplementary information: Choose the most unfavourable conditions to test.				

C1	**TABLE: Temperature rise test**			P
	Ambient temperature (°C) .....:	25		—
Thermocouple Locations	Test current (A)	Upper temperature limit (ULT) (°C)	Temperature rise measured (K)	—
Pin	4	85	22.5	
Accessible non-metal parts	4	85	15.2	
supplementary information: Choose the most unfavourable conditions to test, test for M12-P5A-PLAP9.				

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

C1	**TABLE: Temperature rise test**			P
	Ambient temperature (°C) .....:	25		—
Thermocouple Locations		Test current (A)	Upper temperature limit (ULT) (°C)	Temperature rise measured (K)	—
Pin		4	85	23.2	
Accessible metal parts		4	85	15.8	
supplementary information: Choose the most unfavourable conditions to test, test for M12-P5A-GLAP9.					

D1	**TABLE: Initial measurements (Contact resistance)**						N/A
Test current.....:							—
Test sample	Contact	1	2	3	PE		—
1	ΔU1 [mV]	--	--	--	--	--	
	R1 [mΩ]	--	--	--	--		
supplementary information:							

D5	**TABLE: Final measurements (Contact resistance)**						N/A
Test current.....:							—
Condition.....:		R2max ≤ 1.5R1 or R2max ≤ 5 mΩ + R1					—
Test sample	Contact	1	2	3	PE		—
1	R2max [mΩ]	--	--	--	--	--	
	ΔU2 [mV]	--	--	--	--		
	R2 [mΩ]	--	--	--	--		
supplementary information:							

D6	**TABLE: Dielectric strength (mated specimen)**			P
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)	
Pin and enclosure	2.95	1.39KV	No	
supplementary information:				

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**	
Example ..... :	X	Please mark relevant line with "X"
Kind of equipment	X	Connector without breaking capacity (COC)
		Connector with breaking capacity (CBC)
Existence of an enclosure		Unenclosed connector
	X	Enclosed connector
Design of the connector		Fixed connector
	X	Free connector
Additional characteristics		Connector with protective earthing contact
	X	Connector without protective earthing contact
		Connector with cable clamp
	X	Connector without cable clamp
	X	Connectors (COC) with protection against electric shock for hand back safety, when mated
		Connectors (COC) with protection against electric shock for finger safety
		CBC with protection against electric shock for finger safety, both in mated and unmated condition
	X	Degree of protection of a connector
		Connector for class II equipment
		Connector with interlock
	X	Connector without interlock
		Non-rewirable connector
	X	Rewirable connector
Pollution degree		1
	X	2
		3
		4
Over voltage category		I
	X	II
		III
		IV

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**	
Operating cycles		10
		50
		100
		500
		1000
		2000
		5000
		According manufacturer’s
Bendings		10
		50
		100
		500
		1000
		2000
		5000
		20000
		According manufacturer’s:
Upper temperature limit		70°C
	X	85°C
		100°C
		125°C
		According manufacturer’s:
Lower temperature limit		-10°C
		-25°C
		-40°C
		-55°C
	X	0°C
		According manufacturer’s: °C

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**	
Type of conductor		Solid
	X	Flexible
Termination and connection		Wrapped connection
		Crimped connection
		IDC Accessible
		IDC Non-accessible
		Press in connections
		Insulation piercing connections
		Solder termination
		Screwless-type clamping units
	X	Screw-type clamping units
		Flat, quick-connect terminations
		According manufacturer's:
Values for cable clamp		[4–9 mm]
		[9-12 mm]
		[12-20 mm]
		[20-32 mm]
		[33-42 mm]
		[≥ 42 mm]
		According manufacturer's:
Rated voltage(s) ..... :	60/250VAC	
Rated current ..... :	4A	
Rated impulse voltage(s) ..... :	2500V	
Rated insulation voltage(s) ..... :	500V	
Number of poles ..... :	4	
Protection degree (IP-Code) .... :	IP20	
Mounting ..... :	Screw terminal	
Wire cross section area or cross section range ..... :	0.5mm^2	
Material and coating of female contact ..... :	Copper no plating	
Material and coating of male contact:	Copper plating	

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.2	TABLE: Clearance and creepage distance measurements				
Type / Shell-size / etc. ..... :	Male connector	Female connector	--	--	--
Rated voltage [V] ..... :	250V	250V	--	--	--
Pollution degree ..... :	II	II	--	--	--
Isolation material group ..... :	IIIa	IIIa	--	--	--
Impulse withstand voltage [kV] :	2.5	2.5	--	--	--
Test voltage [kV] ..... :	1.39	1.39	--	--	--
Clearances required ..... :	1.5	1.5	--	--	--
Clearances measured ..... :	>3.0	>3.0	--	--	--
Creepage distances required .. :	2.5	2.5	--	--	--
Creepage distances measured :	>3.0	>3.0	--	--	--
Supplementary information:					

0.3.1	TABLE: IEC 60112 / Tracking test						
Specimen				Erosion depth [mm]			
Part	Material	Material-thickness [mm]	Colour	PTI Test solution [A]	CTI	PTI Test solution [B]	Result
Supplementary information:							

0.3.2	TABLE: IEC 60695-2-11 / Glow-wire-test [60 s]								
Specimen				Flame					
Part	Material	Material-thickness [mm]	Colour	[°C]	Start [s]	End [s]	Height [mm]	Ignition of tissue paper	Result
Enclosure	--	>2	Black	650	No flame	No flame	No flame	No	P
Remained live part	--	>2	Black	750	No flame	No flame	No flame	No	P
Supplementary information:									

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.3.3	TABLE: IEC 89/336/CD / Ball-pressure test						
Specimen				Ball-pressure test			
Part	Material	Material-thickness [mm]	Colour	[°C]	Measured [mm]	Required [mm]	Result
Remained live part	--	>2	Black	125	1.3	<2	P
Enclosure	--	>2	Black	70	0.7	<2	P
Supplementary information:							

0.3.4	TABLE: IEC 60695-2-2 / Needle-flame test						
Specimen				Flame			
Part	Material	Material-thickness [mm]	Colour	Burning duration [s]	Start [s]	End [s]	Result
Supplementary information:							

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

APPENDED TABLE

Critical components

OBJECT/ PART NO.	MANUFACTURER/ TRADEMARK	TYPE/MODEL	TECHNICAL DATA	STANDARD	MARK (S) OF CONFORMITY
Remained live part	TEIJIN CHEMICALS PLASTIC COMPOUNDS SHANGHAI LTD	ML-7500Z(#) (f1)	V-0,125℃ Min. thickness: 1.5mm	UL 94	UL E244324
Plastic enclosure	TEIJIN CHEMICALS PLASTIC COMPOUNDS SHANGHAI LTD	ML-7500Z(#) (f1)	V-0,125℃ Min. thickness: 1.5mm	UL 94	UL E244324

Attachment No.2 Photo Documentation



Figure 1 External View (M12-P5A-PLAP9)

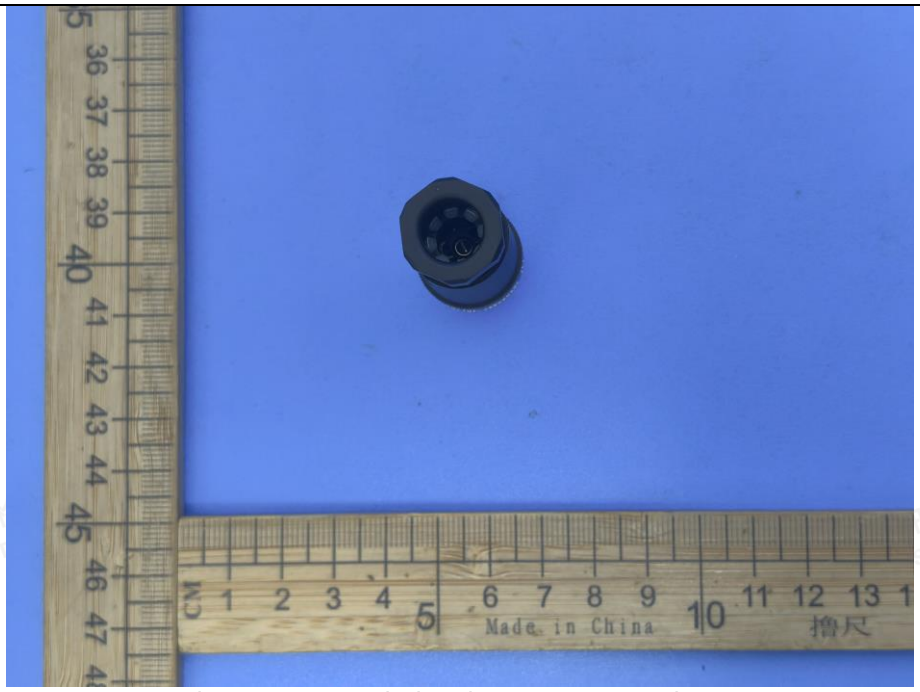

Figure 2 External View (M12-P5A-PLAP9)

Attachment No.2 Photo Documentation

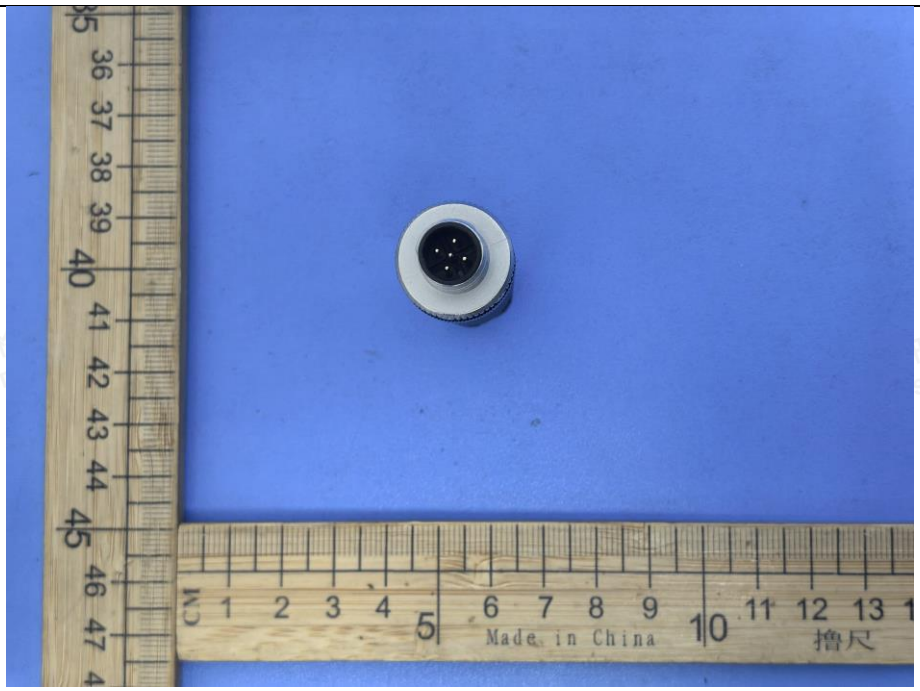

Figure 3 External View (M12-P5A-PLAP9)



Figure 4 Internal View (M12-P5A-PLAP9)

Attachment No.2 Photo Documentation



Figure 5 Internal View (M12-P5A-PLAP9)

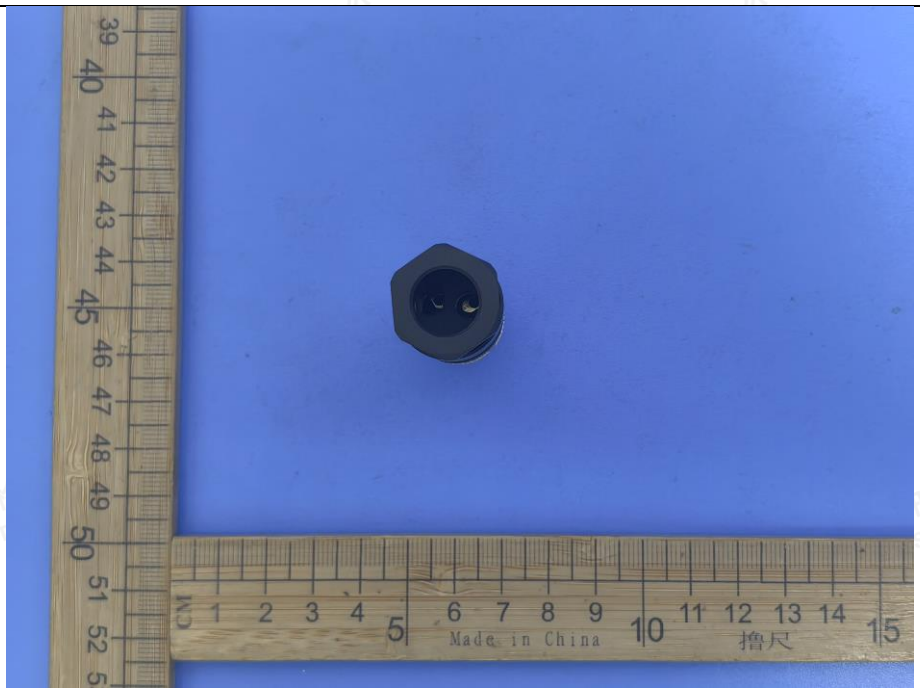

Figure 6 External View (M12-P5A-PLAP9)

Attachment No.2 Photo Documentation

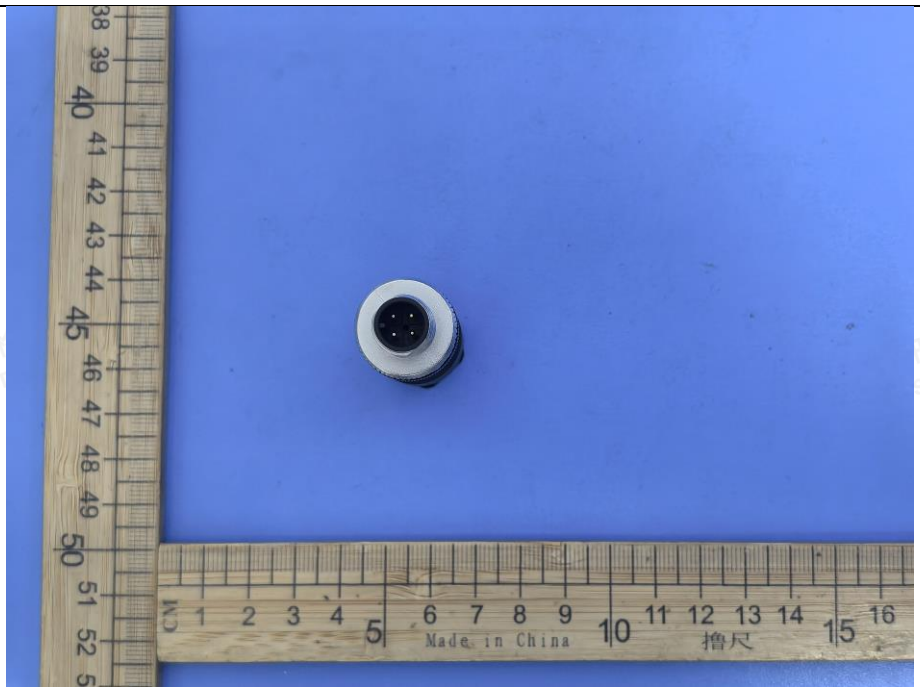

Figure 7 External View (M12-P5A-PLAP9)

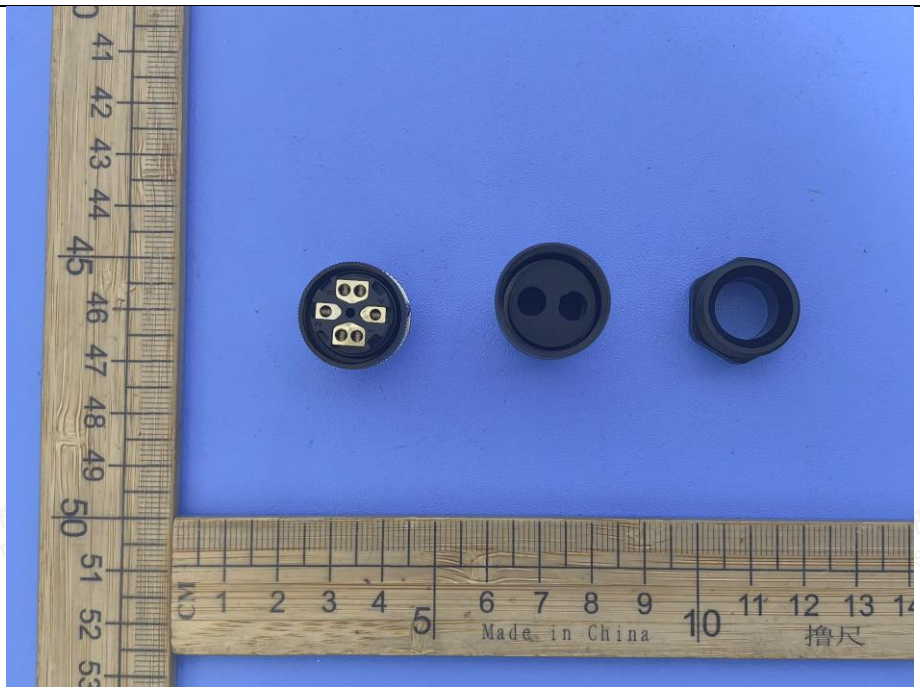

Figure 8 Internal View (M12-P5A-PLAP9)

Attachment No.2 Photo Documentation



Figure 9 External View (M12-P5A-GLAP9)

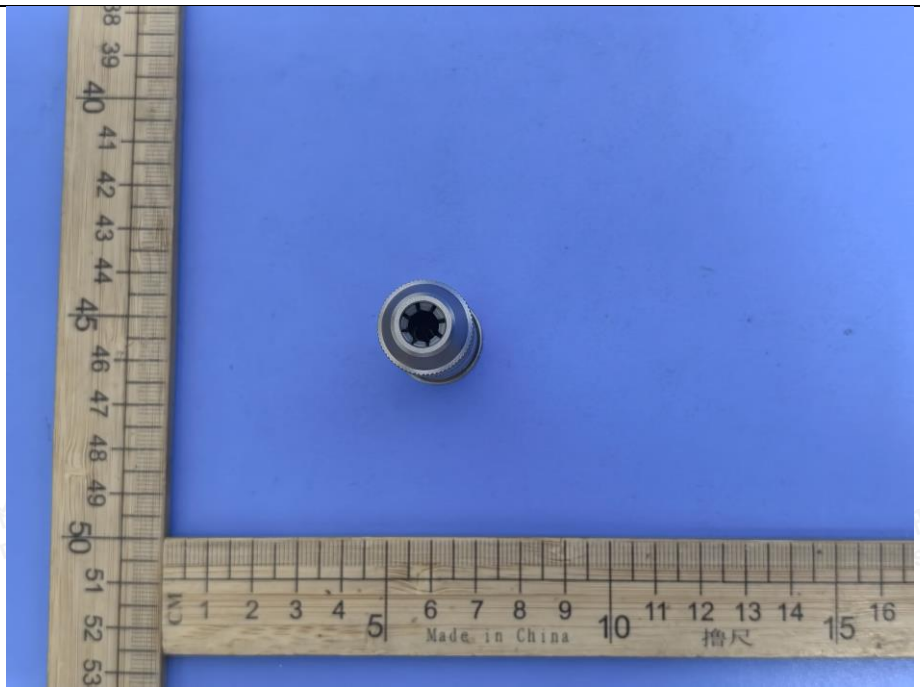

Figure 10 External View (M12-P5A-GLAP9)

Attachment No.2 Photo Documentation

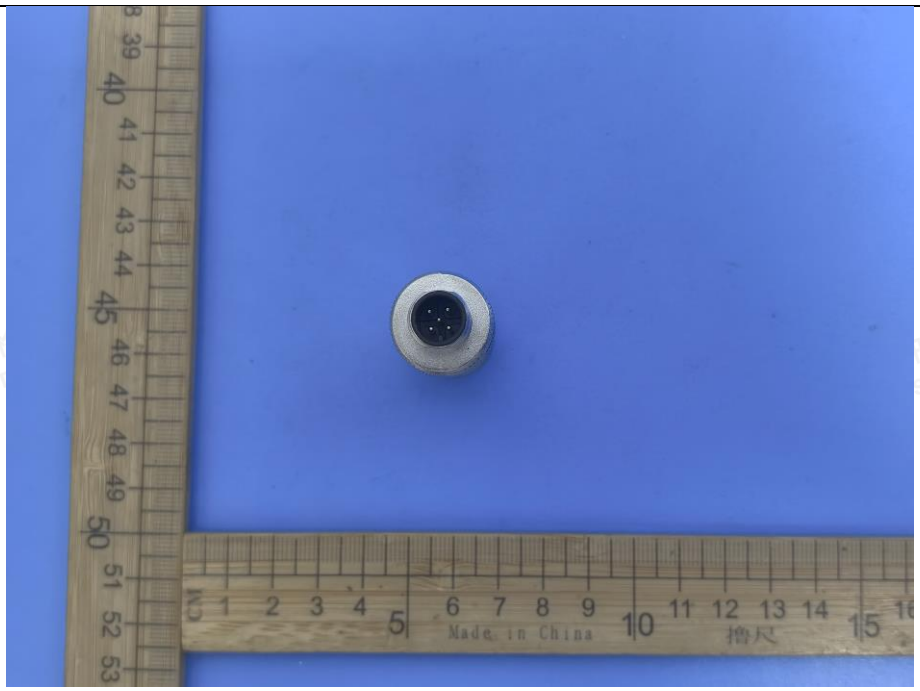

Figure 11 External View (M12-P5A-GLAP9)

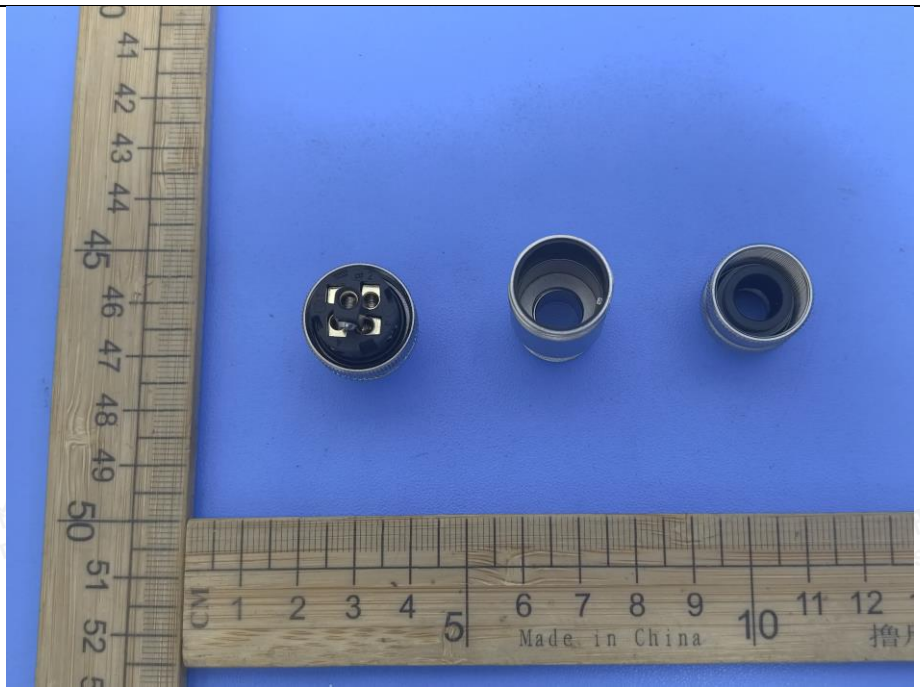

Figure 12 Internal View (M12-P5A-GLAP9)

Attachment No.2 Photo Documentation

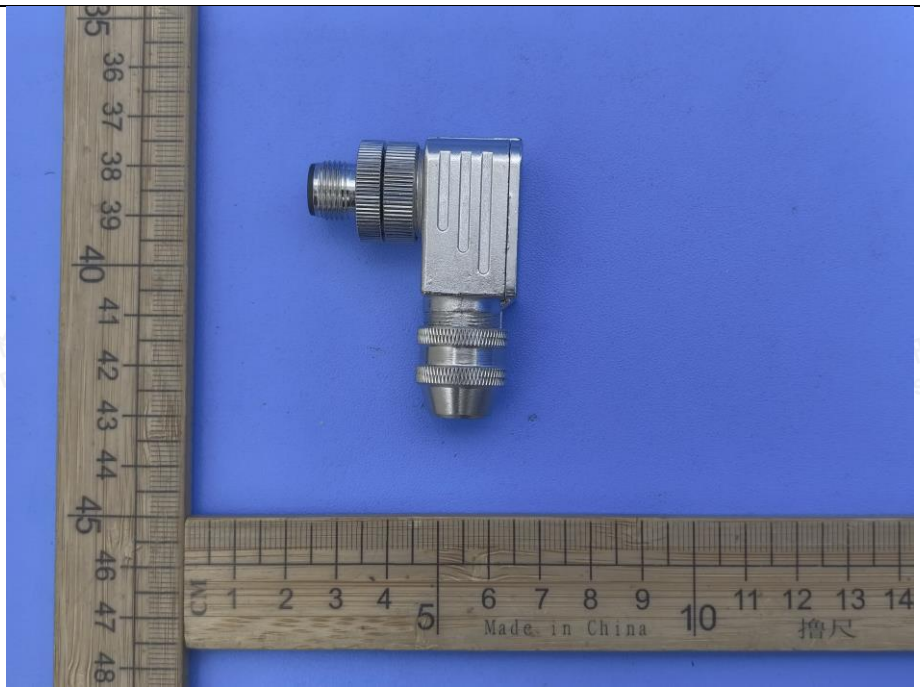

Figure 13 External View (M12-P5A-GLDP9)

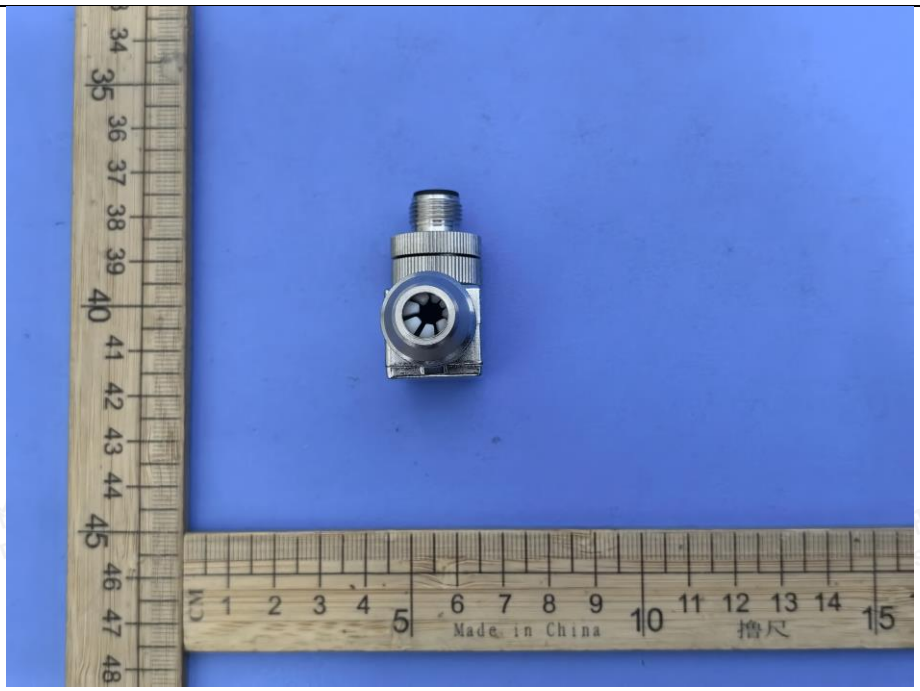

Figure 14 External View (M12-P5A-GLDP9)

Attachment No.2 Photo Documentation

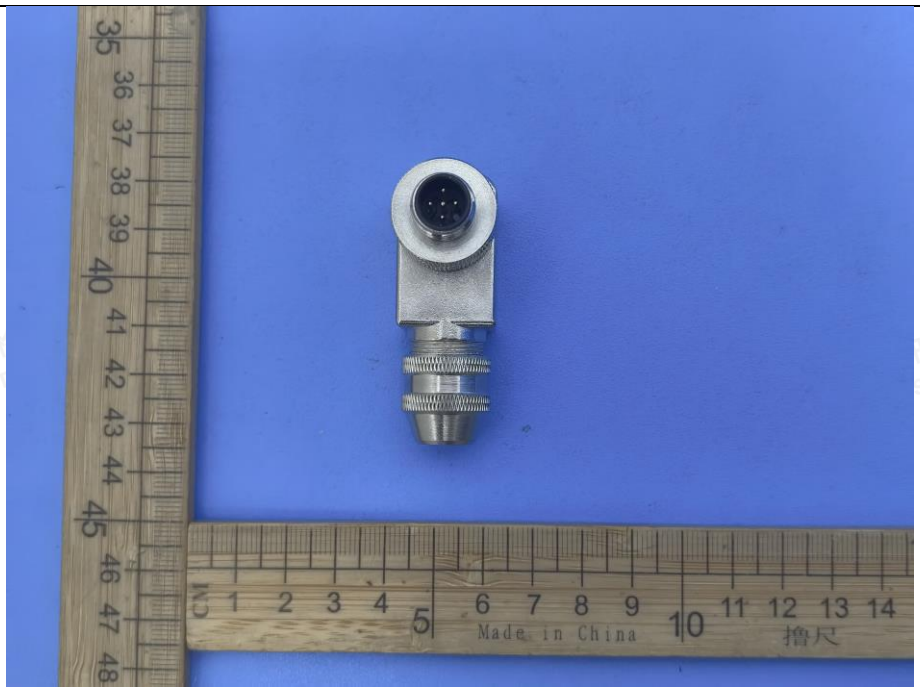

Figure 15 External View (M12-P5A-GLDP9)

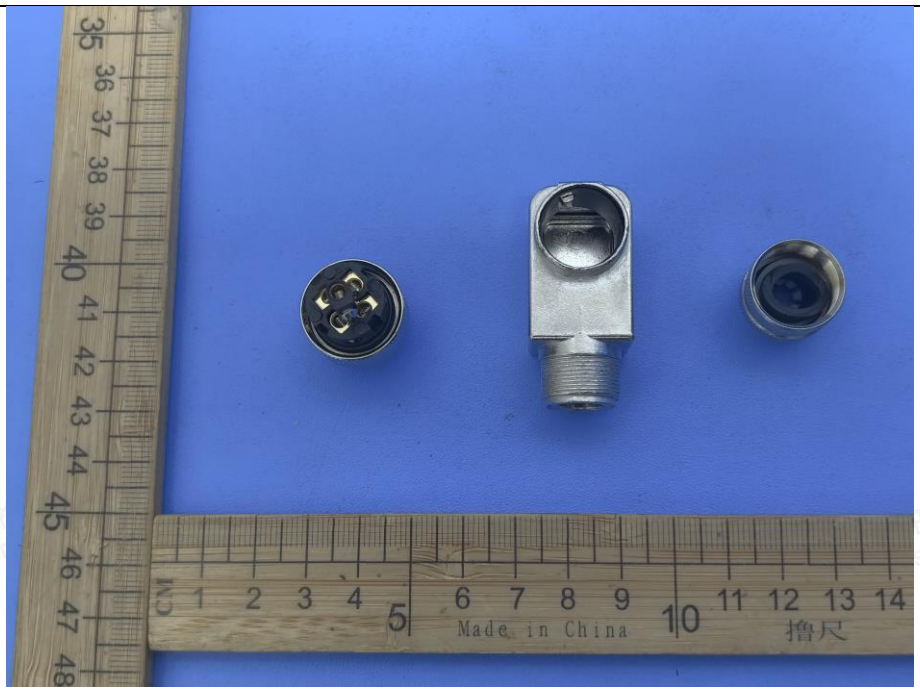

Figure 16 Internal View (M12-P5A-GLDP9)

Attachment No.2 Photo Documentation



Figure 17 External View (M12-P5A-PLDP9)

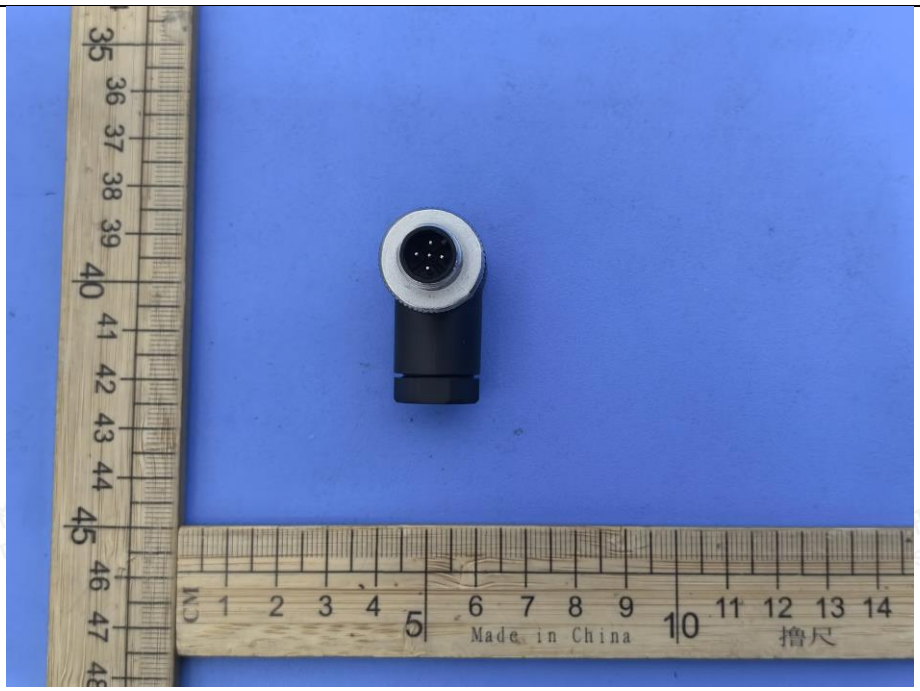

Figure 18 External View (M12-P5A-PLDP9)

Attachment No.2 Photo Documentation



Figure 19 External View (M12-P5A-PLDP9)



Figure 20 Internal View (M12-P5A-PLDP9)

Attachment No.2 Photo Documentation

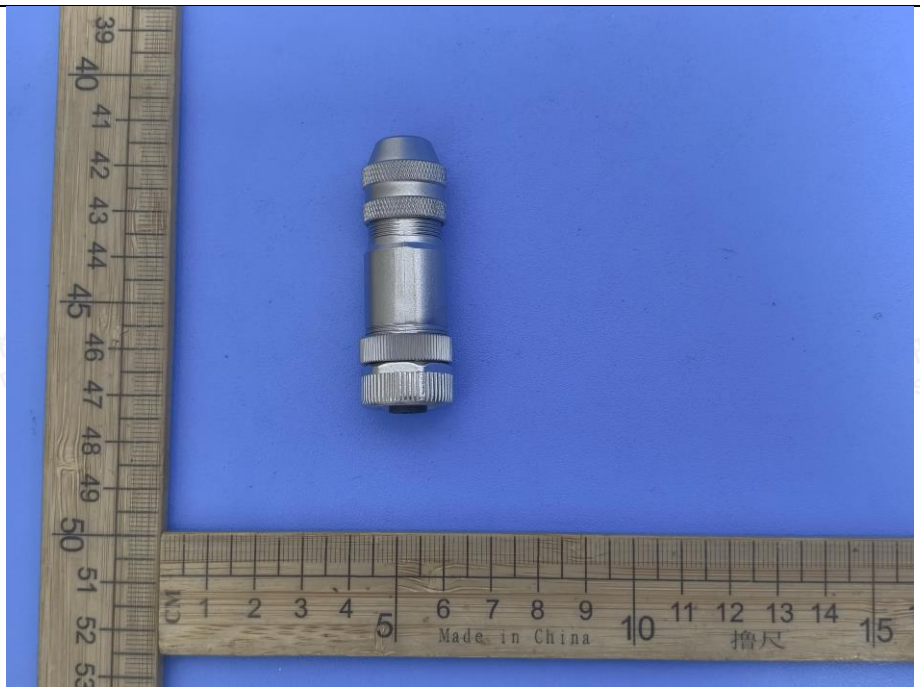

Figure 21 External View (M12-S5A-GLAP9)

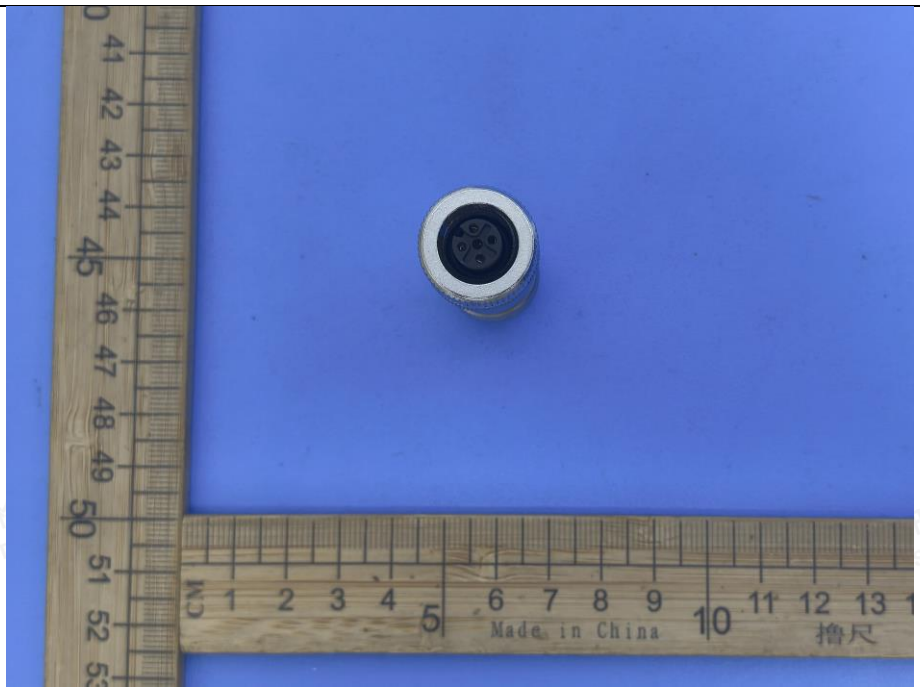

Figure 22 External View (M12-S5A-GLAP9)

Attachment No.2 Photo Documentation

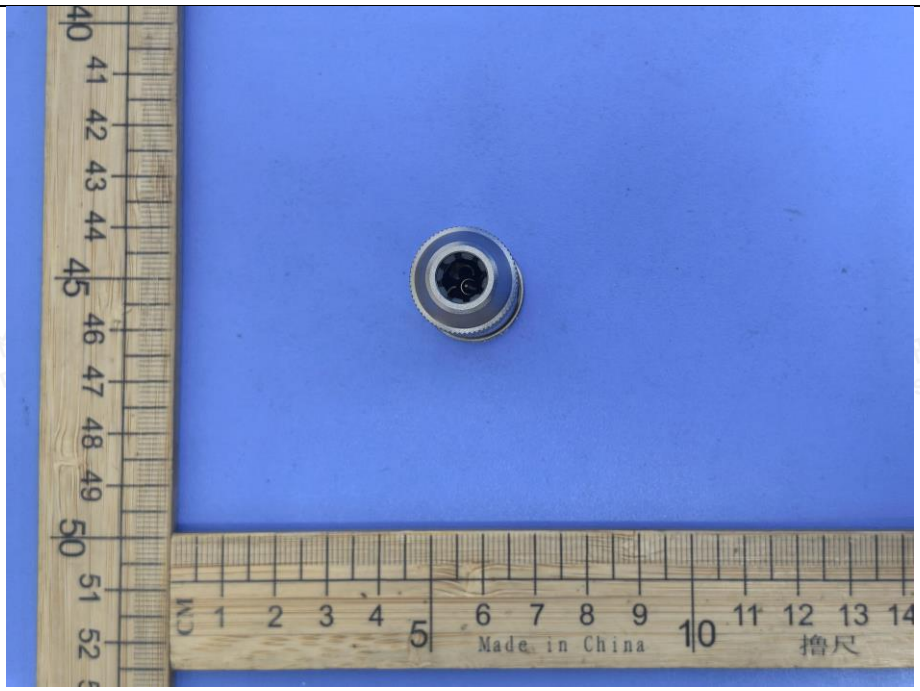

Figure 23 External View (M12-S5A-GLAP9)

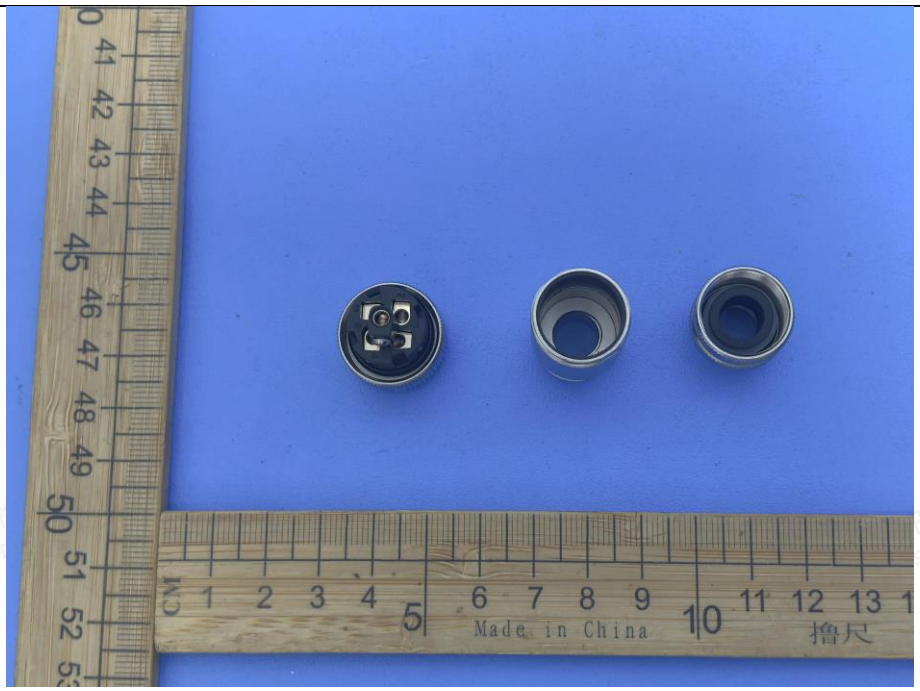

Figure 24 Internal View (M12-S5A-GLAP9)

Attachment No.2 Photo Documentation



Figure 25 External View (M12-S5A-GLDP9)

Attachment No.2 Photo Documentation

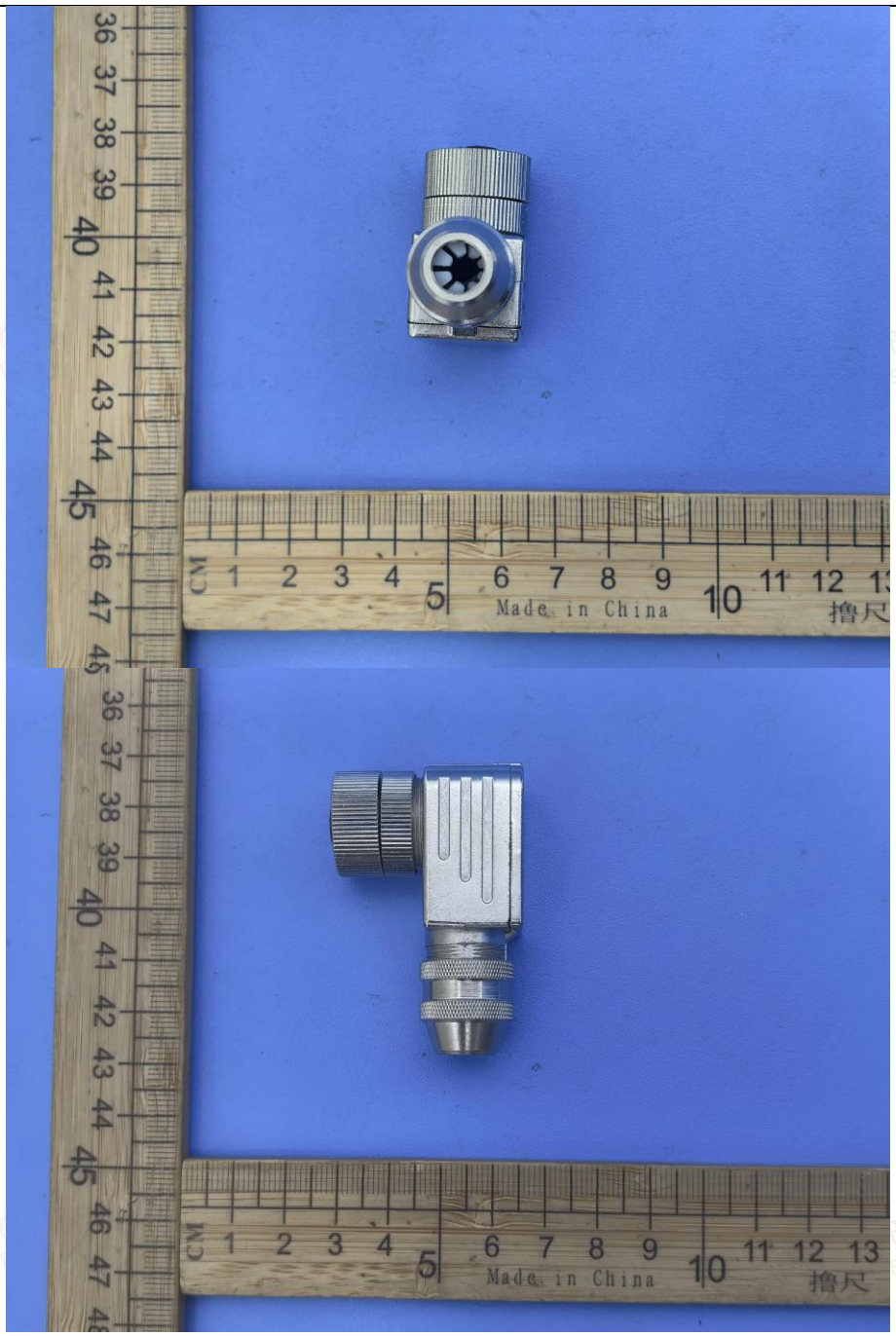

Figure 26 External View (M12-S5A-GLDP9)

Attachment No.2 Photo Documentation



Figure 27 External View (M12-S5A-GLDP9)

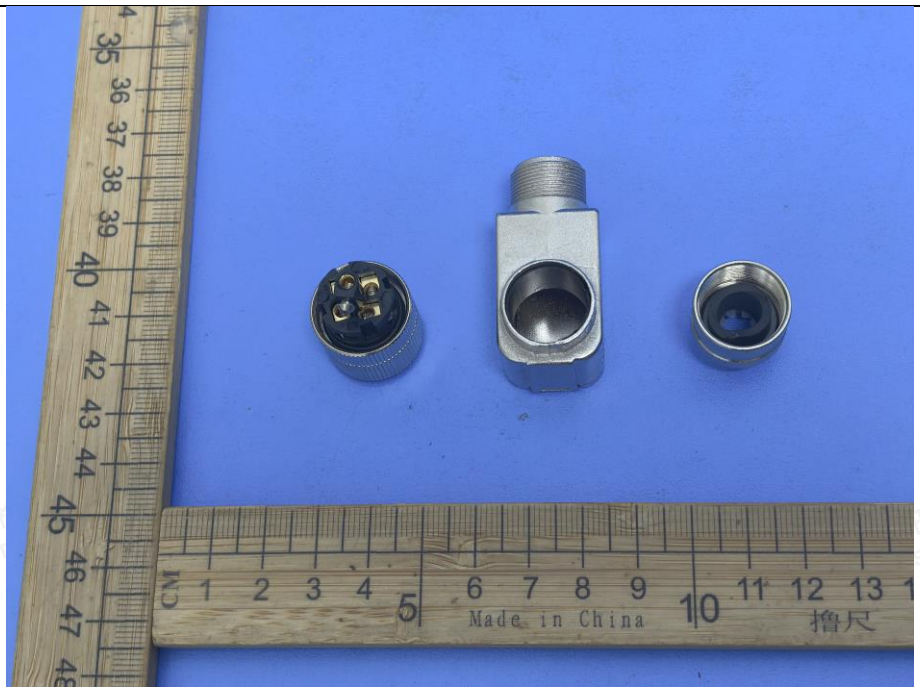

Figure 28 Internal View (M12-S5A-GLDP9)

Attachment No.2 Photo Documentation



Figure 29 External View (M12-S5A-PLAP5)



Figure 30 External View (M12-S5A-PLAP5)

Attachment No.2 Photo Documentation

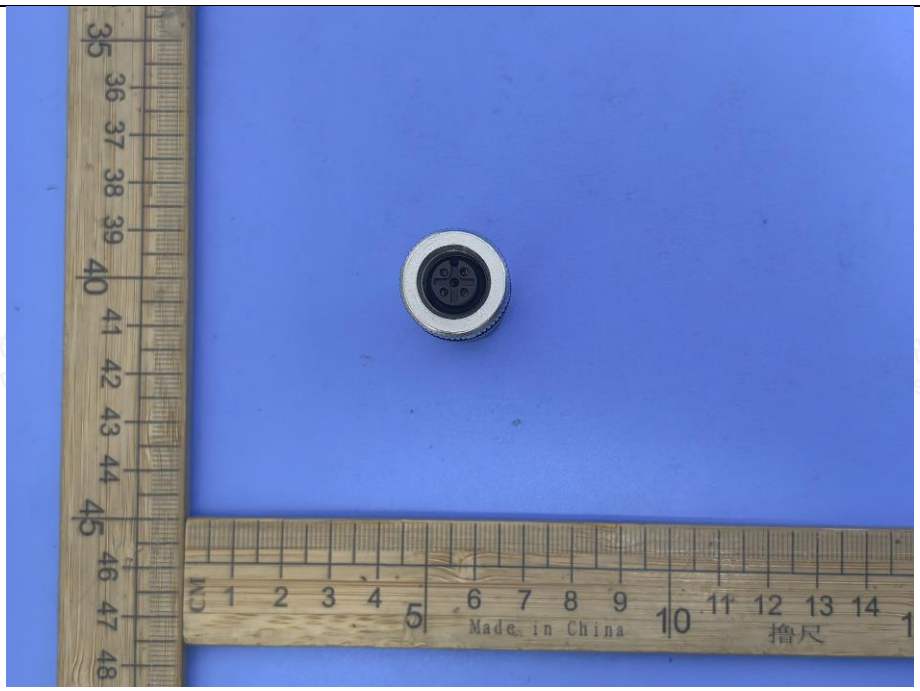

Figure 31 External View (M12-S5A-PLAP5)



Figure 32 Internal View (M12-S5A-PLAP5)

Attachment No.2 Photo Documentation

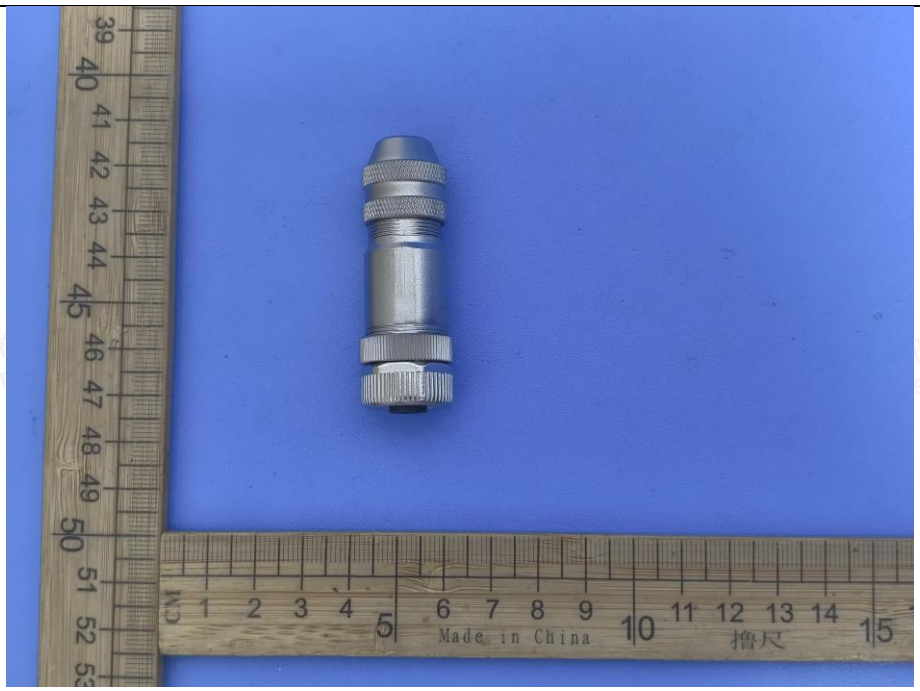

Figure 33 External View (M12-S5A-PLDP9)

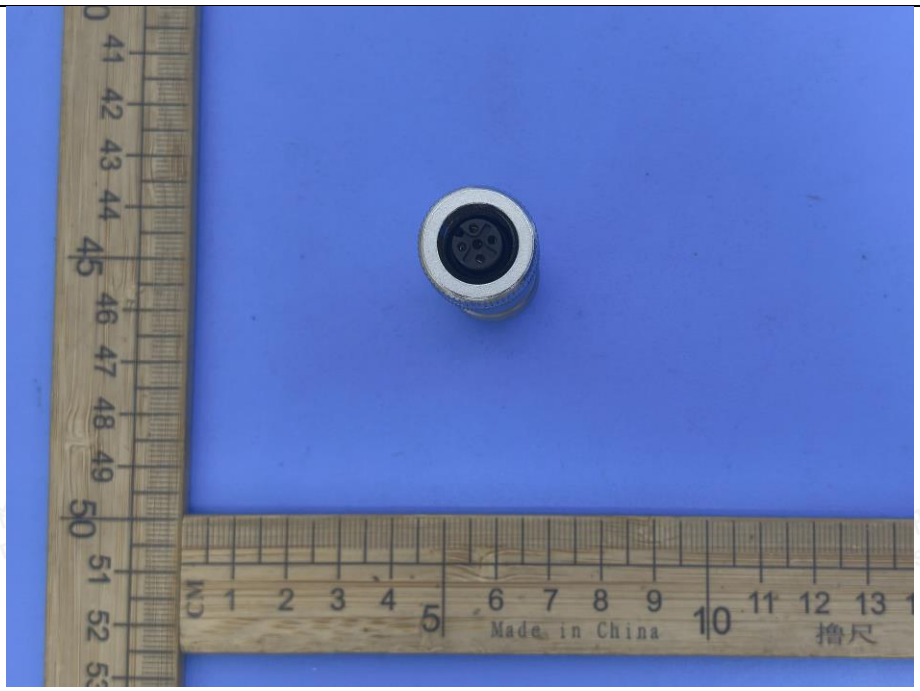

Figure 34 External View (M12-S5A-PLDP9)

Attachment No.2 Photo Documentation

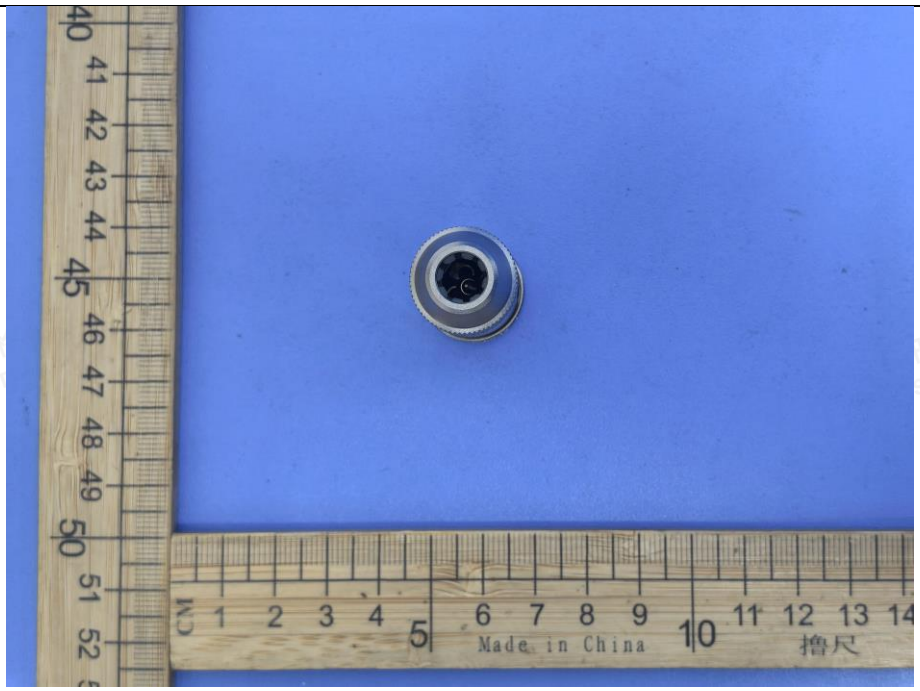

Figure 35 External View (M12-S5A-PLDP9)

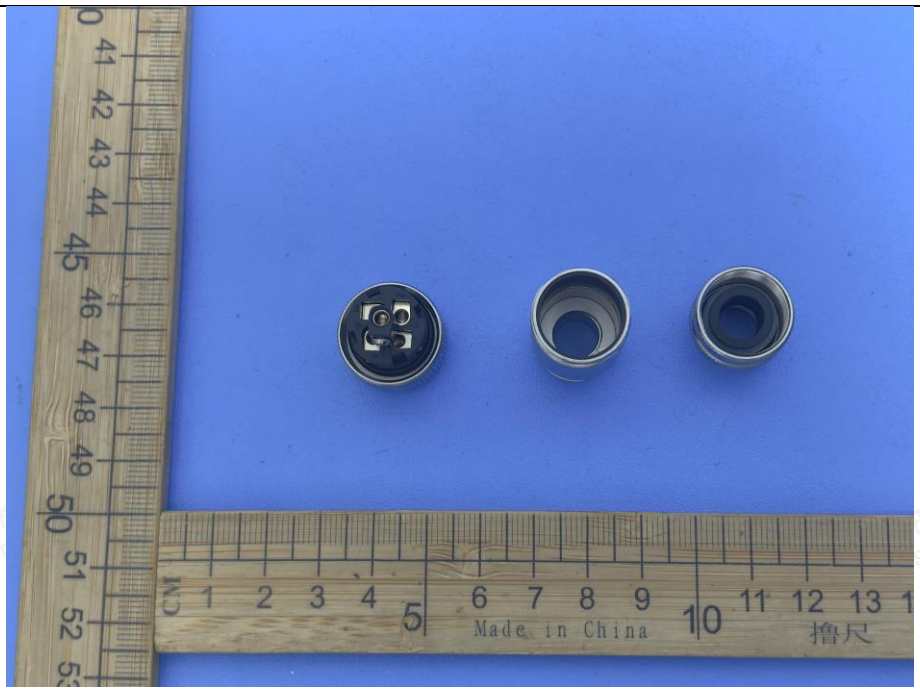

Figure 36 Internal View (M12-S5A-PLDP9)

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