TEST REPORT

EN 60603-7

Connectors for electronic equipment - Part 7: Detail specification for 8-way, unshielded, free and fixed connectors

Report Reference No	22ZCTB1213010SP
Tested by (name + signature)	Sandy Chen
Approved by (name + signature)	Tomy Wu
Date of issue	2022-12-14
Testing Laboratory Name	Shenzhen ZCT Technology Co.,Ltd.
Address	3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China.
Testing location	Same as above
Applicant	**Wenzhou Yijie Electric Co., Ltd**
Address.	No. 83, Fengquan Road, Tianhe Street, Wenzhou Economic and Technological Development Zone, Wenzhou City, Zhejiang Province
Test specification:	
Standard	EN IEC 60603-7:2020
Test procedure	Test report
Non-standard test method	N/A
Test Report Form No	Test report
Test item description	Terminal Port
Trade Mark	N/A
Manufacturer	Same as applicant
Model/Type reference	AN2253 AB2250, AN2250, AG2250, VA2250, AB2251, AN2251, AG2251, VA2251, AB2252, AN2252, AG2253, VA2252, AB2253, AN2253, AG2252, VA2253, AB2355, AN2355, AG2355, VA2355, AB2356, AN2356, AG2356, VA2356, AB2354, AN2354, AG2354, VA2354, AB2401, AN2401, AG2401, VA2401, AB2402, AN2402, AG2402, VA2402, AB3002, AN3002, AG3002, VA3002
Ratings	220VAC 50/60Hz 6A
Operating condition	Continuous

Test item particulars..... :	Terminal Port
Temperature by measurement..... :	25℃
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..... :	2022-11-30
Date (s) of performance of tests ..... :	2022-11-30 to 2022-12-14

General remarks:

The test results presented in this report relate only to the object tested.

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"(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.

General product information:

Maximum recommended ambient (Tmra): 25°C.

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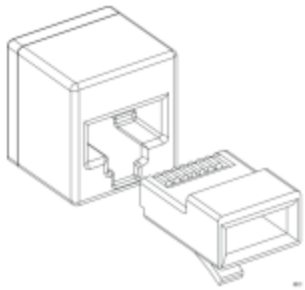
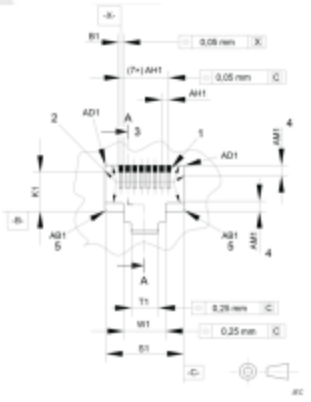
Clause	Requirement	Remark	Result
4	**Common features and typical connector pair**		—
4.1	View showing typical fixed and free connectors (see Figure 2)	 Figure 2 – View showing typical fixed and free connectors	P
4.2	Mating information		P
4.2.1	General		P
	Dimensions are given in millimetres. Drawings are shown in third-angle projection. The shape of connectors may deviate from those given in Figure 2 to Figure 5 as long as the dimensions specified are not changed. Table 1 through Table 3 list the dimensions for the connectors in Figure 2 through Figure 5		P
4.2.2	Contacts – mating conditions		P
4.2.3	Fixed connector		P
4.2.4	Free connector		P
5	Cable terminations and internal connections – Fixed and free connectors		P
5.1	General		P
	A connector may include multiple terminations between the cable termination and the separable contact interface. These may include press-in connections of fixed connector contacts into PCBs for example. All terminations shall meet the relevant termination requirements.		P
5.2	Termination types		P
5.2.1	Solder terminations		P
	Soldered terminations shall conform to IEC 61760-3.		N/A
5.2.2	Solderless terminations		N/A

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Clause	Requirement	Remark	Result
5.2.2.1	Insulation displacement terminations		P
	Insulation displacement terminations shall conform to IEC 60352-3 or IEC 60352-4.		P
5.2.2.2	Crimp terminations		P
	Crimp terminations shall conform to IEC 60352-2.		P
5.2.2.3	Insulation piercing terminations		P
	Insulation piercing terminations shall conform to IEC 60352-6.		P
5.2.2.4	Press-in terminations		P
	The compliant pin shall conform to IEC 60352-5.		P
5.2.2.5	Spring clamp terminations		P
	Spring clamp terminations shall conform to IEC 60352-7.		P
5.2.2.6	Other types		P
	In the case where a type of solderless termination is used which is not covered by any IEC standard and the supplier cannot demonstrate a similar level of performance or there is no applicable IEC 60352 standard to be used as a reference, the supplier shall show conformance with the full test schedule in 8.7.3 for all possible variations of termination, for example each cable construction type (screen construction types, wire construction (solid, flexible)) the connector is intended to be used for		P
6	Gauges		P
6.1	Fixed connectors		N/A
	Gauges shall be made according to the following requirements:		N/A
	Material: hardened and tempered steel, all sharp edges removed, hardness 650 HV 20 minimum.		P
6.2	Free connectors		N/A
	Material: hardened and tempered steel, all sharp edges removed, hardness 650 HV 20 minimum.		P
7	Characteristics		P
7.1	General		P
	Compliance to the test schedules is intended to ensure the reliability of all performance parameters, including transmission parameters, over the range of operating climatic conditions. Stable and compliant contact resistance is a good indication of the stability of transmission performance.		P
7.2	Pin and pair grouping assignment		P
	For those specifications where pin and pair groupings are relevant, the pin and pair grouping assignments shall be as shown in Figure 1 0,		P

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Clause	Requirement	Remark	Result
	unless otherwise specified.		
7.3	Classification into climatic category		P
	The lowest and highest temperatures and the duration of the damp-heat steady-state test should be selected from the preferred values stated in 2.3 of IEC 61 076-1 :2006. The connectors are classified into climatic categories in accordance with the general rules given in IEC 60068-1 . The temperature range and severity of the damp heat, steady state test given in Table 7 are compatible with ISO/IEC 1 1 801 -1 classification of an office environment.		P
7.4	Electrical characteristics		P
7.4.1	Creepage and clearance distances		P
	The permissible operating voltages depend upon the application and also on the specified safety requirements.		P
	Although insulation coordination is not required for these connectors for safety aspects, it is required for electrical functional requirements. In general, for minimum values of creepage and clearance distances, IEC 60664-1 shall apply, based upon the assigned voltage rating 50 V AC and 60 V DC.		P
	The creepage and clearance distances that cover performance requirements in IEC 60664-1 may be reduced, based on IEC TR 63040.		P
	The creepage and clearance distances given in Table 8 apply as operating characteristics of mated connectors according to this document.		P
	In practice, reductions in creepage or clearance distances can occur due to the conductive pattern of the printed board or the wiring used, and should in such case duly be taken into account.		P
7.4.2	Voltage proof		P
	Standard atmospheric conditions Mated connectors All variants: 1 000 V DC or AC peak; one contact to all other contacts connected together. 1500 V DC or AC peak; all contacts connected together to shield, (housing/mounting plate) if present.		P
7.4.3	Current-temperature derating		P
	Conditions: IEC 60512, Test 5b All contacts, connected in series		P
7.4.4	Interface contact resistance – initial only		P
	Conditions: IEC 6051 2, Test 2a Arrange according to 8.2 Mated connectors Measuring points: as specified in Figure 1 2 All types: 20 mΩ maximum		P

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Clause	Requirement	Remark	Result
7.4.5	Input to output DC resistance		P
	Conditions: IEC 6051 2, Test 2a Mated connectors Measuring points: as specified in Figure 1 2 All types: 200 mΩ maximum		P
7.4.6	Input-to-output DC resistance unbalance		P
	Conditions: IEC 6051 2, Test 2a Mated connectors Measuring points: Cable termination to cable termination Among all signal conductors, maximum difference between maximum and minimum All types: 50 mΩ maximum		P
7.4.7	Initial insulation resistance		P
	Conditions: IEC 6051 2, Test 3a Method A Mated connectors Test voltage: 1 00 V DC All types: 500 MΩ minimum		P
7.4.8	Transfer impedance		P
7.5	Transmission characteristics		P
	Transmission characteristics are defined in the applicable IEC 60603-7-x specifications for connectors with assigned upper transmission frequencies above 3 MHz. For connectors that operate up to 3 MHz frequency, these characteristics are covered by test group EP.		P
7.6	Mechanical characteristics		P
7.6.1	Mechanical operation		P
	Conditions: IEC 6051 2, Test 9a Speed: 1 0 mm/s maximum Rest: 1 s minimum (mated and unmated) PL 1 : 750 operations PL 2: 2 500 operations		P
7.6.2	Effectiveness of connector coupling devices		P
	Conditions: IEC 6051 2, Test 1 5f All types: 50 N for 60 s ± 5 s		P
7.6.3	Insertion and withdrawal forces		P
	Conditions: IEC 6051 2, Test 1 3b Speed: 1 0 mm/s maximum All types, insertion and withdrawal: 20 N maximum		P
8	Tests and test schedule		P

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Clause	Requirement	Remark	Result
8.1	General		P
8.2	Arrangement for interface contact resistance test		P
	Figure 1 2 illustrates the arrangements for the free and fixed connector interface contact resistance measurements.		P
8.3	Arrangement for vibration test (test phase CP1)		P
8.4	Test procedures and measuring methods		P
8.5	Preconditioning		P
8.6	Wiring and mounting of specimens		P
8.6.1	Wiring		P
	The conductor diameter for these connectors shall be specified by the manufacturer, and shall be selected (as a minimum) from the following:		
	a) for the fixed connector, the conductor diameter of IEC 61156-2, IEC 61156-4, IEC 61156-5 or IEC 61156-7;		P
	for the free connector, the conductor diameter of IEC 61156-3 or IEC 61156-6.		P
8.6.2	Mounting		P
	When mounting is required in a test, unless otherwise specified, the connectors shall be rigidly mounted on a metal plate or to specified accessories, whichever is applicable, using the specified connection methods, fixing devices and panel cut-outs as laid down in this specification.		P
8.7	Test schedules		P
8.7.1	General		P
	The test parameters required shall not be less than those listed in Clause 6		N/A
8.7.2	Basic (minimum) test schedule		P
8.7.3	Full test schedule		P
8.7.3.1	General		P
	The following tests specify the characteristics to be checked and the requirements to be fulfilled.		P
	For a complete test sequence, 62 specimens are needed (6 groups of 1 0 and 1 group of 2: the group of 2 shall be for transmission testing, group EP).		P
8.7.3.2	Test group P – preliminary		P
	All specimens shall be subjected to the following tests. All the test group specimens shall be subjected to the preliminary group P tests in the		P

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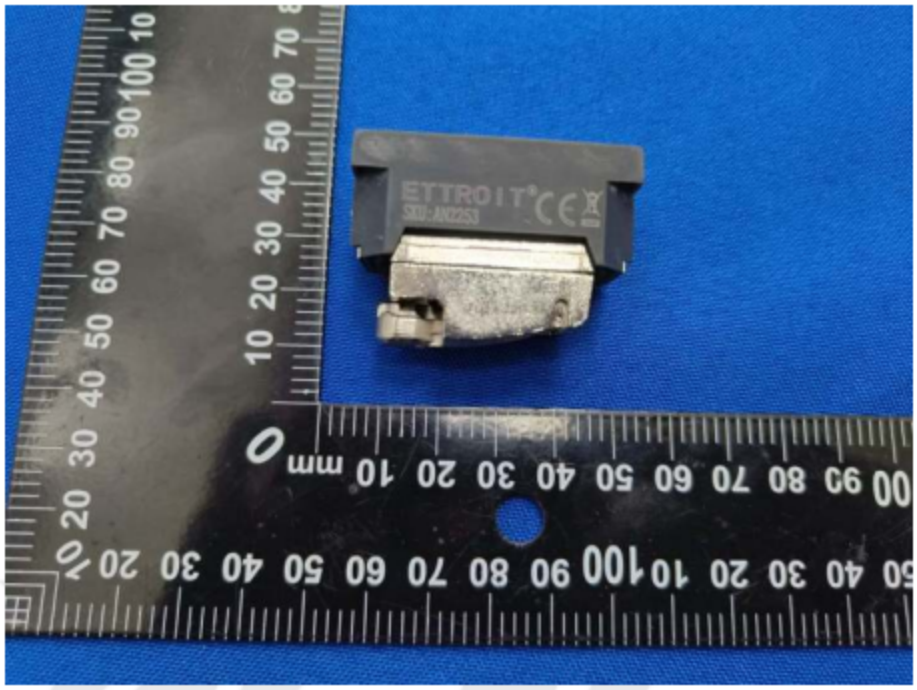
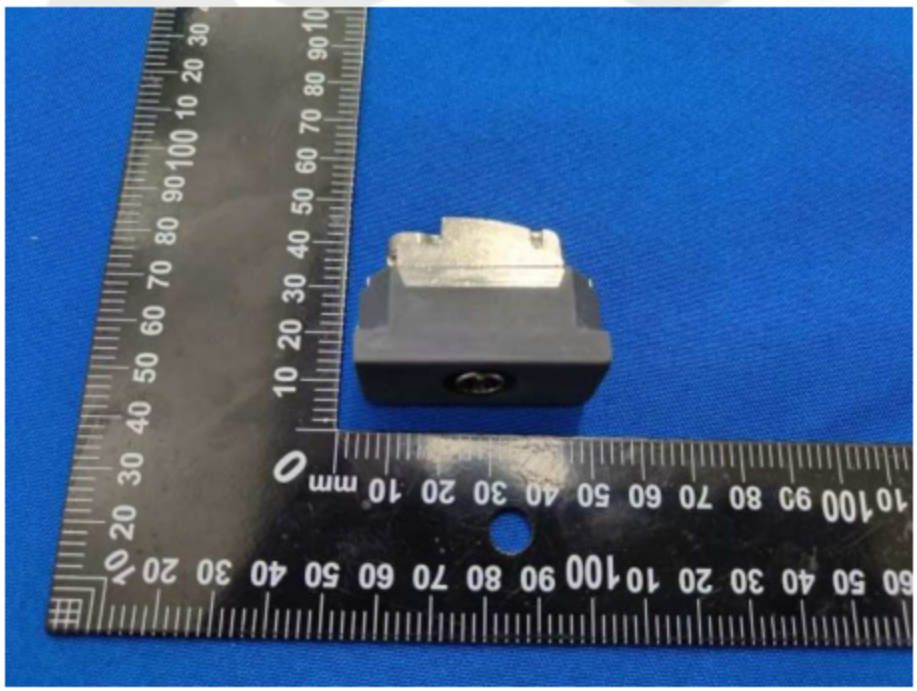
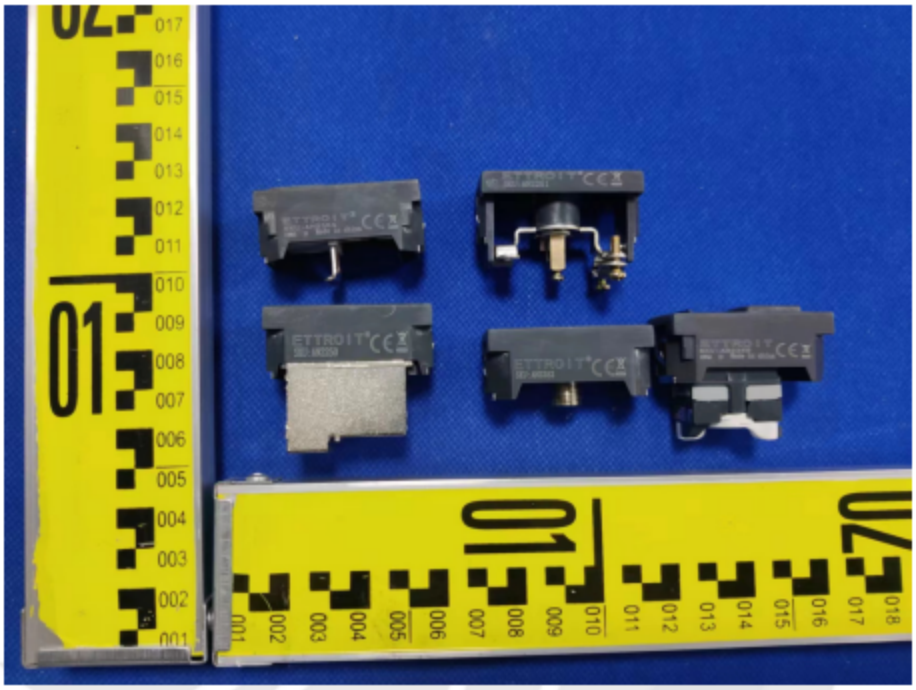
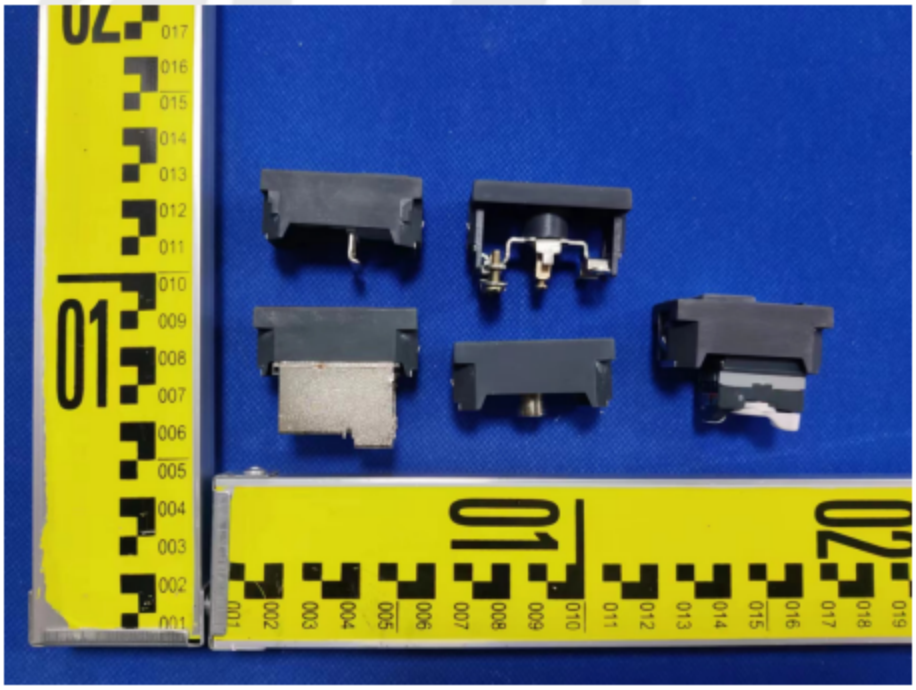
Clause	Requirement	Remark	Result
	following sequence; see Table 9.		
	The specimens shall then be divided into the appropriate number of groups. All connectors in each group shall undergo the following tests as described in the sequence given (see Table 1 0 through Table 1 5).		P
8.7.3.3	Test group AP		P
8.7.3.4	Test group BP		P
8.7.3.5	Test group CP		P
8.7.3.6	Test group DP		P
8.7.3.7	Test group EP		P
8.7.3.8	Test Group FP		P
Annex A	Gauging continuity procedure		P
Annex B	Locking device mechanical operation		P
Annex C	Gauge requirements		P
Annex D	Keystone connector information		P
Annex E	Levels of compatibility		P

ANNEX I Photos of Product









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