# Test Report
# EN IEC 61439-1
# Low-voltage switchgear and controlgear assemblies - Part 1: General rules

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|---|---|
| **Report Reference No**..... : | AiTSZ-260608031S |
| Date of issue..... : | 2026-06-29 |
| Total number of pages..... : | 13 |
| **Testing Laboratory name**..... : | Guangdong Asia Hongke Test Technology Limited |
| Address..... : | Room B1101/B1201, Building 11, Junfeng Industrial Park, Chongqing Road, Heping, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China |
| Testing location..... : | Same as above |
| Tested by (+ signature)..... : | Green Zhang |
| Approved by (+ signature)..... : | Nick Xiang |
| **Applicant's name**..... : | CESol d.o.o. |
| Address..... : | Krpanova ulica 7, SI-6000 Koper – Capodistria Slovenia |
| **Manufacturer's name**..... : | Guorui Intelligent Manufacturing (Shenzhen) Electric Co., Ltd. |
| Address..... : | No. 3, Dayang 2nd Road, Yulv Community, Yutang Subdistrict, Guangming District, Shenzhen City, Guangdong Province, P.R.China |
| **Factory's name** ……..... ..... : | Guorui Intelligent Manufacturing (Shenzhen) Electric Co., Ltd. |
| Address ..... : | No. 3, Dayang 2nd Road, Yulv Community, Yutang Subdistrict, Guangming District, Shenzhen City, Guangdong Province, P.R.China |
| **Test specification:** | |
| Standard..... : | EEN IEC 61439-1:2021 + EN IEC 61439-2:2021 |
| Test procedure..... : | Type test |
| Procedure deviation..... : | N/A |
| Non-standard test method..... | N/A |

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the specific product described herein. It must not be duplicated or used in part without prior written consent from Guangdong Asia Hongke Test Technology Limited. Unless otherwise specified, the measurement uncertainty is not considered in this report.

**Test Object:**

Description..... : DC Combiner Box

Trademark.....:

Manufacturer..... : Guorui Intelligent Manufacturing (Shenzhen) Electric Co., Ltd.

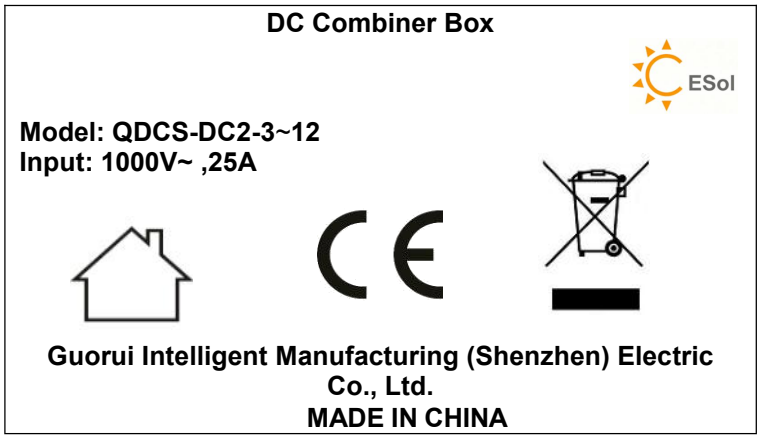
Model and/or type reference..... : QDCS-DC2-3~12

Serial number..... : QDCS-DC2-5~6,QDCS-DC2-3~4

Rating(s)……: Input:1000V~ ,25A

**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.




**Remark:**

1. The marking plate of all models are identical except for model number.
2. The above marks are the minimum requirements required by the safety standard. For the final production, the additional marks which do not give rise to misunderstanding may be added.
3. Height of CE mark at least 5mm, height of WEEE mark at least 7mm, height of other marks at least 5mm.
4. According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.

| | |
|---|---|
| **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..... :** | 2026-06-08 |
| **Date (s) of performance of tests.....:** | 2026-06-08 to 2026-06-16 |

**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.**

**Summary of testing:**

All tests were performed at the worst case and all test results complied with the standard on cover page.

**General product information and other remarks:**

1. The product is DC Combiner Box designed as audio/video, information and communication technology equipment, for indoor use only.

2. All the circuits of EUT are considered as ES1 circuits.

3. Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

4.All model′s the function, software and electric circuit are the same. Only with a product color and model named different. Test Sample Model:QDCS-DC2-3~12.

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1. | Scope | | P |
| 2 | Normative references | | P |
| 3 | Terms and definitions. | | P |
| 4 | Application of assemblies within the IEC 61439 series | | P |
| 4.1 | General | | P |
| 4.2 | Assembly design and verification | | P |
| 4.3 | Service conditions and interface characteristics. | | P |
| 4.4 | Application design | | P |
| 5 | Electrical | | P |
| 5.1 | General | | P |
| 5.2 | Earthing system | | P |
| 5.3 | Nominal voltage | | P |
| 5.4 | Transient overvoltages | | N/A |
| 5.5 | Unusual voltage transients, temporary overvoltages | | N/A |
| 5.6 | Rated frequency fn (Hz) | | P |
| 5.7 | Additional on-site testing requirements: wiring, operational performance and function | | N/A |
| 6 | Short-circuit withstand capability | | P |
| 6.1 | General | | P |
| 6.2 | Prospective short-circuit current at supply terminals Icp (kA). | | N/A |
| 6.3 | Prospective short-circuit current in the neutral | | P |
| 6.4 | Prospective short-circuit current in the protective circuit | | N/A |
| 6.5 | Short-circuit protective device (SCPD) | | N/A |
| 6.6 | Coordination of short-circuit protective devices including external short-circuit | | P |
| 6.7 | Data associated with loads likely to contribute to the short-circuit current | | P |
| 6.8 | Multiple supplies | | N/A |
| 7 | Protection of persons against electric shock | | P |
| 7.1 | General | | P |
| 7.2 | Basic protection (protection against direct contact) | | P |
| 7.2.1 | General | | P |
| 7.2.2 | Basic insulation provided by insulating material | | P |
| 7.2.3 | Basic insulation by barriers or enclosures | | P |
| 7.3 | Fault protection (protection against indirect contact) | | P |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 7.3.1 | General | | P |
| 7.3.2 | Requirements for the protective conductor to facilitate automatic disconnection of the supply | | P |
| 7.3.3 | Electrical separation | | P |
| 7.3.4 | Class II protection (double or reinforced insulation) | | P |
| 8 | Installation environment | | P |
| 8.1 | General | | P |
| 8.2 | Location type | | P |
| 8.3 | Protection against access to hazardous parts, ingress of solid foreign bodiesand ingress of water (IP code) | | P |
| 8.4 | External mechanical impact (IK code) | | P |
| 8.5 | Resistance to radiation | | N/A |
| 8.5.1 | General | | N/A |
| 8.5.2 | Solar irradiance | | N/A |
| 8.5.3 | Ultraviolet (UV) radiation | | N/A |
| 8.6 | Resistance to corrosion | | P |
| 8.7 | Ambient air temperature | | P |
| 8.8 | Maximum relative humidity | | P |
| 8.9 | Pollution degree | | P |
| 8.10 | Altitude | | P |
| 8.11 | Electromagnetic compatibility (EMC) | | N/A |
| 8.12 | Special service conditions | | N/A |
| 8.12.1 | General | | N/A |
| 8.12.2 | Climatic conditions | | N/A |
| 8.12.3 | Protection against ingress of solid foreign bodies and ingress of water(IP code) | | N/A |
| 8.12.4 | Shock, vibration, seismic occurrence and external mechanical impact(IK code) | | N/A |
| 8.12.5 | Fire and explosion hazards | | N/A |
| 8.12.6 | Exceptional overvoltage | | N/A |
| 8.12.7 | Polluted atmospheres | | N/A |
| 8.12.8 | EMC environment | | N/A |
| 9 | Installation method | | P |
| 9.1 | General | | P |
| 9.2 | Assembly type | | P |
| 9.3 | Portability | | N/A |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 9.4 | Maximum overall dimensions and weight | | P |
| 9.5 | External conductor type(s) | | N/A |
| 9.6 | Direction(s) of external conductors | | N/A |
| 9.7 | External conductor material | | N/A |
| 9.8 | External line conductor, cross sections, and termination | | N/A |
| 9.9 | External PE, N, PEN, PEM, PEL conductors' cross sections, andterminations | | N/A |
| 9.10 | Special terminal identification requirements | | P |
| 10 | Storage and handling | | P |
| 10.1 | General | | P |
| 10.2 | Maximum dimensions and weight of transport units | | P |
| 10.3 | Methods of transport (e.g. forklift, crane) | | N/A |
| 10.4 | Environmental conditions different from the service conditions | | N/A |
| 10.5 | Packing details | | P |
| 11 | Operating arrangements | | N/A |
| 11.1 | General | | N/A |
| 11.2 | Access to manually operated devices | | N/A |
| 12 | Maintenance and upgrade capabilities | | P |
| 12.1 | General | | P |
| 12.2 | Requirements related to accessibility for inspection and similar operations | | P |
| 12.3 | Requirements related to accessibility for maintenance in service by authorized persons | | P |
| 12.4 | Requirements related to extension under voltage | | P |
| 12.5 | Protection against direct contact with hazardous live internal parts during maintenance or upgrade | | P |
| 12.6 | Method of functional unit connection | | P |
| 12.7 | Operating and maintenance gangways within an assembly | | N/A |
| 12.8 | Internal separation (only relevant for assemblies in accordance with IEC 61439-2) | | N/A |
| 12.8.1 | Fundamentals of separation | | N/A |
| 12.8.2 | Considerations when determining a form of separation | | N/A |
| 12.8.3 | Selecting the most appropriate form of separation | | N/A |
| 13 | Current carrying capability | | P |
| 13.1 | General | | P |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 13.2 | Rated current of the assembly InA (A) (maximum current allowable) | | P |
| 13.3 | Loading of outgoing circuits within an assembly | | P |
| 13.4 | Ratio of cross section of the neutral conductor to line conductors | | N/A |
| 13.4.1 | General | | N/A |
| 13.4.2 | Line conductors up to and including 16 $mm^2$ | | N/A |
| 13.4.3 | Line conductors above 16 $mm^2$ | | N/A |
| 14 | Assembly design and routine verification processes | | N/A |
| 14.1 | Design verification | | N/A |
| 14.1.1 | Object | | N/A |
| 14.1.2 | Methods | | N/A |
| 14.1.3 | Records | | N/A |
| 14.2 | Routine verification | | N/A |
| 14.2.1 | General | | N/A |
| 14.2.2 | Records | | N/A |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| Test Item | Standard Requirement | Measured Value(mm) | Result(PASS/FAIL) | Remark |
|---|---|---|---|---|
| Main circuit clearance(Uimp=12kV) | ≥14.0mm | 16 | Pass | No altitude correction |
| Auxiliary circuit clearance(Uimp=6kV) | ≥8.0mm | 10 | Pass | Control circuit |
| Main circuit creepage distance(CTI≥600,PD2) | ≥16.0mm | 17.7 | Pass | Pollution grade 2 |
| Auxiliary circuit creepage distance | ≥10.0mm | 11.9 | Pass | |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| Test Point | Max Allowable Temperature Rise(K) | Measured Temperature Rise(K) | Result |
|---|---|---|---|
| Main copper busbar | 70K | 35.9 | P |
| Circuit breaker incoming terminal | 70K | 37.3 | P |
| Circuit breaker outgoing terminal | 70K | 36.4 | P |
| PE protective busbar | 70K | 39.5 | P |
| SPD terminal | 75K | 34.8 | P |
| Internal insulation support | 80K | 24.7 | P |

| Test Position | Test Voltage | Duration | Flashover/Breakdown | Result |
|---|---|---|---|---|
| Main circuit vs Enclosure/PE | 2500V AC | 60s | No | P |
| Phase to phase main circuit | 2500V AC | 60s | No | P |
| Auxiliary circuit vs PE | 1000V AC | 60s | No | P |

| EN IEC 61439-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 4.1.2 | TABLE: Critical components information | | | | P |
|---|---|---|---|---|---|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity[1)] |
| DC circuit breaker | CESol d.o.o | CSM1-63DC-425 | DC1000V、4P、25A、6kA | EN IEC 61439-1 | Tested with appliance |
| Fuse | CESol d.o.o | CSPV-30D | DC1000V、25A | EN IEC 61439-1 | Tested with appliance |
| Surge | CESol d.o.o | CSPD40PV1200 A3 | Uc:DC1200V、40kA、3P | EN IEC 61439-1 | Tested with appliance |
| Enclosure | CESol d.o.o | CSDB10-18T | V-0,130 | EN IEC 61439-1 | Tested with appliance |
| Supplementary information: | | | | | |
| 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. License available upon request. | | | | | |

**EUT Photos**




Photo 1 External view

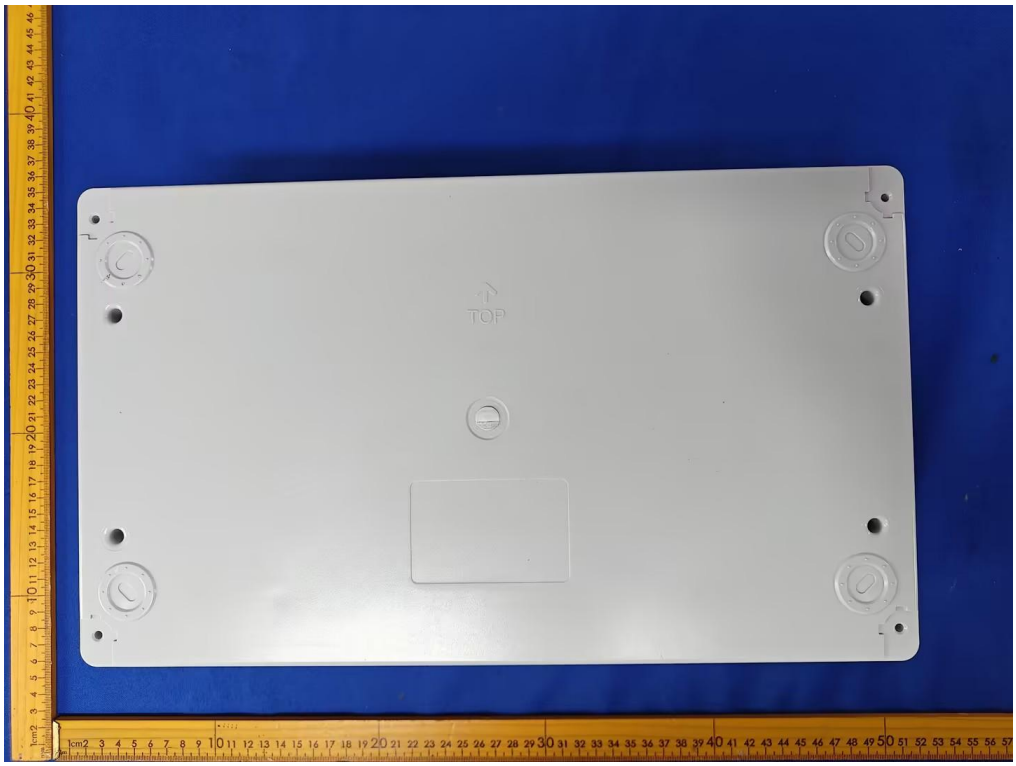



Photo 2 External view

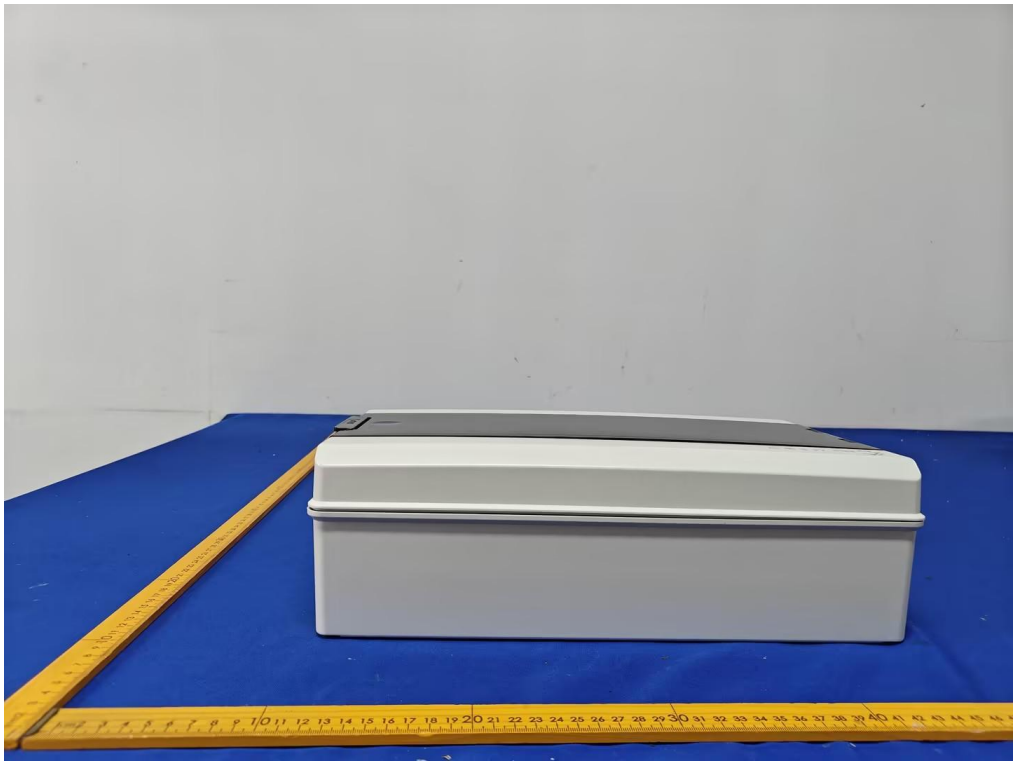


Photo 3 External view

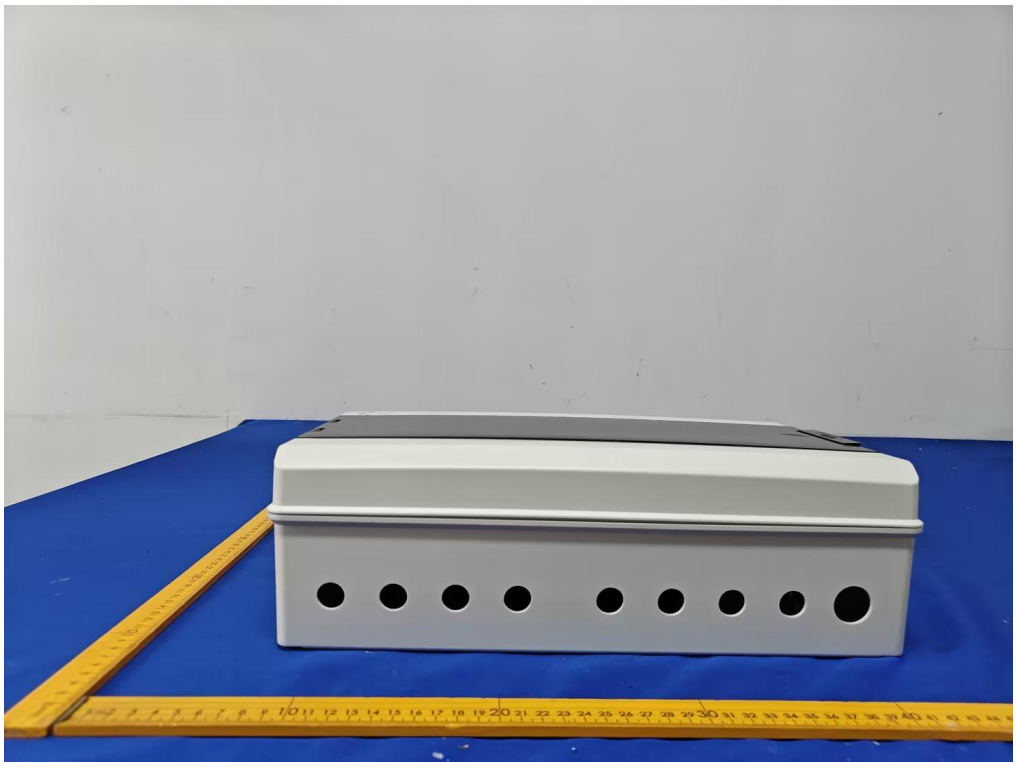


Photo 4 External view

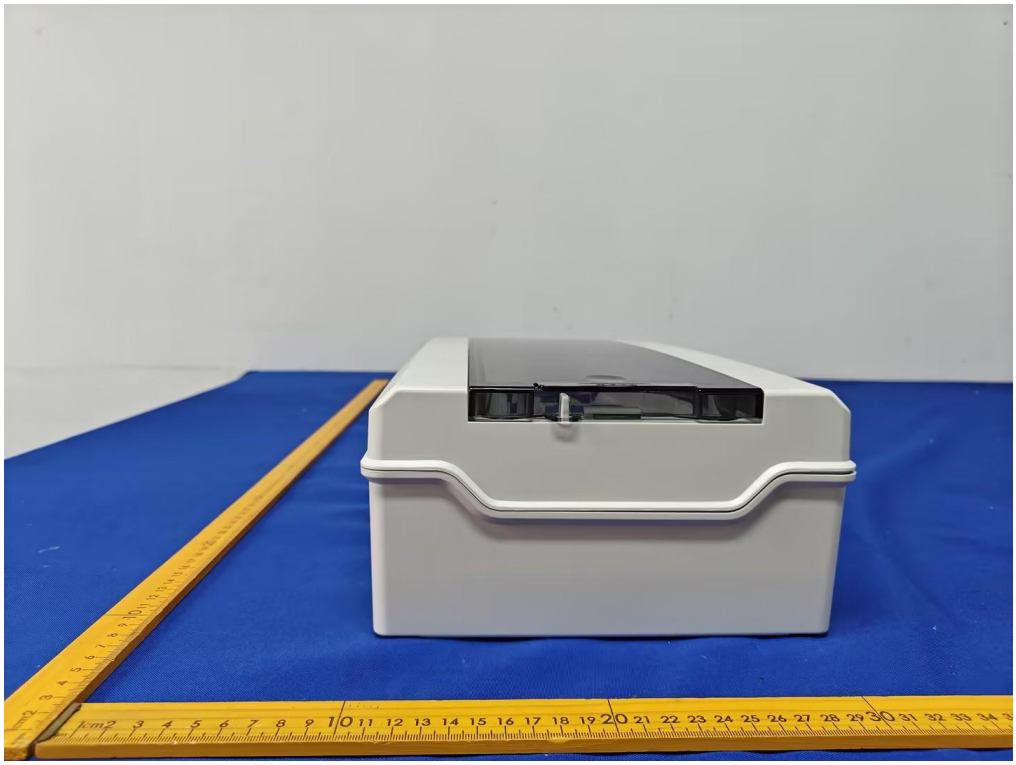


Photo 5 External view

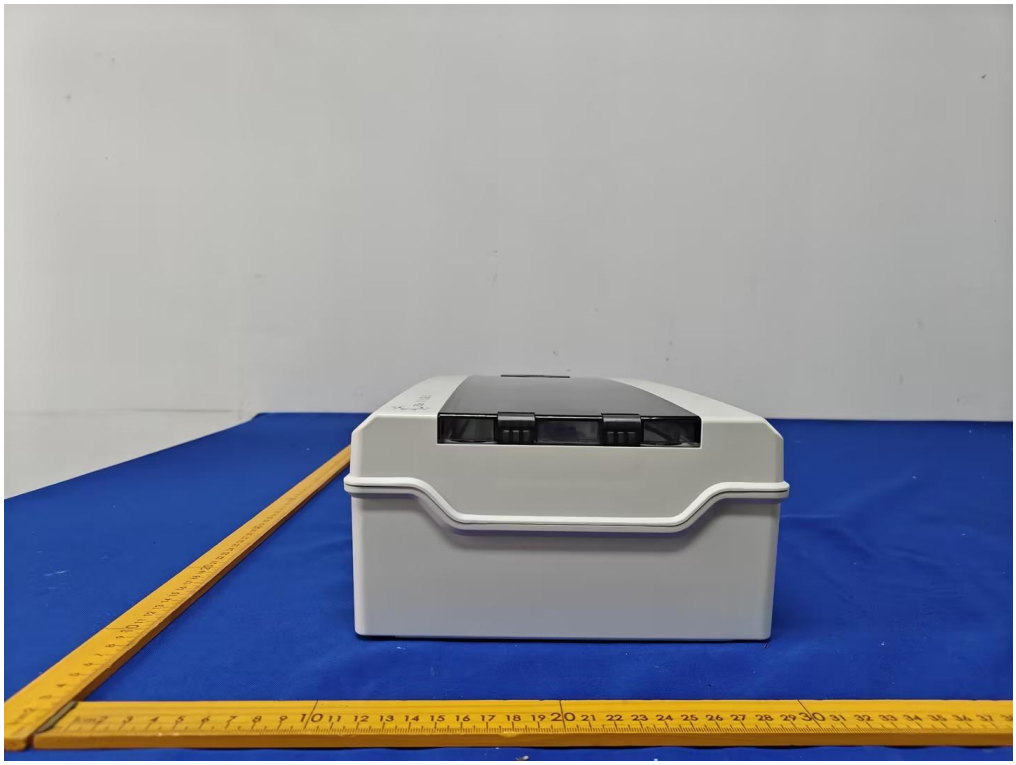


Photo 6 External view

*****End of Report*****