# TEST REPORT

## EN 61010-1

## Part of the electricity machine of the safety

| | |
|---|---|
| **Report the reference have no. .....**: | TR22011701 |
| Test by (+ signature) .....: | Jime liu |
| Approved by (+ signature).....: | Kenny |
| The date of the Issued .....: | 2022 -01-17(updated 2023-04-26) |

| | |
|---|---|
| **The test laboratory .....:** | Kind Product Technical Service Co., Ltd |
| Address ..... : | No.48, Tofine Zone, Huanggusuan Rd., Hangzhou P.R. of China |
| Test the position.....: | Kind Product Technical Service Co., Ltd |
| Adress.....: | No.48, Tofine Zone, Huanggusuan Rd., Hangzhou P.R. of China |

| | |
|---|---|
| **Applicant name .....:** | Ningbo Cowell Electronics & Technology Co., Ltd. |
| Address.....: | Building 1, No. 59, Changxing Road, Jiangbei District, Ningbo, Zhejiang Province, China |

| | |
|---|---|
| **Test the specification:** | POWER METER |
| Standard..... : | EN 61010-1:2010+A1:2019 |
| Test the procedure: | CE-LVD |

**The test reports that the shape have no.:.....**



| | |
|---|---|
| **Test the item depiction .....:** | POWER METER |
| The trade symbolize.....: | |
| The model/ type reference .....: | PMB01, PMB01B, PMB03, PMB02, PMB02B, PMB05, PMB05B, PMB06, PMB09 |
| Difference of models ..... : | All are same, except the overall shape |

Name plate Copy

**Product name:** POWER METER

**Model:** PMB01
**Rating:** 230V/50Hz, 3680W
**Manufacturer:** Ningbo Cowell Electronics & Technology Co., Ltd.
**Address:** Building 1, No. 59, Changxing Road，Jiangbei District, Ningbo, Zhejiang Province, China
**Caution:** To prevent risk electric shock, don not open the enclosure
Please disconnect the power supply before change heat element.

CE

The summary of the test: The model of PMB01 was tested all item,

| | |
|---|---|
| **Test the item detail ..... :** | All safety test and construction review |
| The type of the tools and implements ..... : | |
| Appliance..... : | Portable |
| Protect the stroke of the contrary electricity ..... : | Class I |
| Protect the index..... : | IP2X |
| Other characteristic..... : | |
| The temperature of the surroundings of the list price( C) ..... : | 15℃ --30 ℃ |
| **The solid example of possible test decide:** | |
| Test the solid example shouldn't used for testing the object..... : | N/A |
| Test the item does the meeting need ..... : | P( Pass) |
| Test the item can't need ..... : | F( failure) |
| **Test ..... :** | |
| The date of the test item of receipt ..... : | 2023-04-07 |
| The test that date( s) ..... : | 2023-04-26 |

**Common remarks**

**This test report is not valid likewise the test report unless sign at was test by the Laboratory.**

Test result the donation reports the description but object test at this.
This report won't be a replication, the expect is ample, did not write of approve the test laboratory of lassoing.

"(See surround#)" check another circular affixture to the report.
"(See the additional table)" check the table affixture to the report.

Spread over this reports that the comma (order) is a usage similarly ten enter to make to box off the sign.

| EN 61010-1 | | | |
|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 4 | General test condition<br>Should check the requirements according to test result. | | P |
| 4.1 | Two test condition: Basic<br>Fault condition | Basic<br>Fault condition | P |
| 4.2 | Test schedule<br>If the test maybe damaged the unit, can test at the final | | P |
| 4.3 | Basic test condition | | P |
| 4.3.1 | The test condition should as following except other specified<br>Temperature: 15℃-35℃<br>Humidity: less than 75%<br>Aerosphere pressure value: 75Kpa-106Kpa | | P |
| 4.3.2 | The test unit should be test at the unfavourably condition except other specified | | P |
| 4.3.3 | Under free ventilation | | P |
| 4.3.7 | Test under every unfavourably input voltage marked in label | | P |
| 4.3.8 | Protect earth terminal should connect to earth | Connect earth | P |
| 4.3.9 | Control button | | P |
| 4.3.10 | Connection | | P |
| 4.3.11 | Motor load | | P |
| 4.3.12 | Output | Not output | N/A |
| 4.3.13 | Operation weeks | | P |
| 4.3.14 | Load and fill | | P |
| 4.3.15 | Heating equipment | | P |
| | Test according to clause 9.2.1 | | P |
| 4.4 | Single fault condition | | P |
| 4.4.1 | Following | | P |
| 4.4.2 | Infliction fault condition | | P |
| 4.4.2.1 | Protect impedance | | P |
| 4.4.2.2 | Protect conductor should cut | | P |
| 4.4.2.4 | Motor complete power should stop or prevent start | | P |
| 4.4.2.5 | Capacitor should short circuit | | P |
| 4.4.2.6 | Transformer | Switch power approved | P |
| 4.4.2.7 | Equipment output should short | | P |

| EN 61010-1 | | | |
|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 4.4.2.9 | Cooling<br>Limit to:<br>-------Close vent of filter<br>-------stop cooling electric fan with motor<br>-------stop cooling for circle water or other refrigerant | | N/A |
| 4.4.2.10 | Heating set | | P |
| 4.4.2.11 | Insulation circuit and parts pass item 9.1 check should not short | | P |
| 4.4.3 | Times condition continue | | P |
| 4.4.3.1 | Per item testing limit to in one hour | | P |
| 4.4.3.2 | Equipment which use blackout or limit circuit should test reach maximal temperature | | P |
| 4.4.3.3 | Leakage circuit during use thermal cut-out stop fault | | P |
| 4.4.4 | Check out | | P |
| 4.4.4.1 | Protect electric shock according to:<br>-----test 6.3.2 item<br>-----Use double or strengthen insulation according to 6.8.4 item | | P |
| 4.4.4.2 | Temperature requirement: Test temperature of surface or accessible parts<br>Should not exceed 105C | See test data | P |
| 4.4.4.3 | Spread fire: equipment cover gauze should placed softwood cover cotton paper | | P |
| 4.4.4.4 | Prevent 1.2 item describe other danger according to check clause 7~clause 15 | | P |
| 5 | Marking and document | | P |
| 5.1.1 | Epuipment should mark according to item 5.1.2~5.2,and see .Should not mark parts take down without tool | | P |
| 5.1.2 | Marking<br>------manufacture name or registered trade mark<br>------model 、designation or recognise equipment other method | See above marking information | P |
| 5.1.3 | Power supply<br>a) Character:<br>--------AC: rated frequency or frequency range<br>--------DC: ——<br>b) Rated voltage or rated voltage range | AC input | P |

| EN 61010-1 | | | |
|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 5.1.4 | Thermal cut-out<br>Can instead should mark rated circuit and model; can not instead should shower relative information in documentation | | P |
| 5.1.5 | Circuit terminal<br>Voltage less than 50V(a.c.) or 120V(d.c.) should mark near to terminal or nameplate or on terminal. | | P |
| 5.1.6 | Terminal and operate device<br>a) Function earth terminal: see item 5.1.2 table 1<br>sign 5<br>b) Protect conductor terminal: see item 5.1.2table<br>sign 6<br>c) Terminal for with power plug or circuitthermal cut-out should mark ”on” or ”off” clear.<br>d) Dry cabinet or similar instruments doorshould mark with “open” | | P |
| 5.1.7 | Equipment for double or strengthen insulation should mark item 5.1.2 table 1 sign 11… | | N/A |
| 5.1.8 | Battery electrified should mark | | N/A |
| 5.2 | Notice mark | | P |
| 5.3 | Mark endurance<br>According to item 5.1.2~5.2 | | P |
| 5.4 | Documentation | | P |
| 5.4.1 | Provide documentation be accompanying with equipment:<br>------- Technical procedure<br>-------Use instructions manual<br>------For technical helping manufacturer or vendor name and address<br>------Item 5.4.2~5.4.5 regulated information | See instruction manual | P |
| 5.4.2 | Equipment operate condition | | P |
| 5.4.3<br>5.4.3.101 | Setting<br>If instrument may not comply with this standard after moisture condition, manufacturer should specified in instruction manual | Comply with standard after moisture condition | P |
| 5.4.4 | Operation<br>If the accessible parts are dangerous, it should add specified protect method | | P |
| 5.4.5 | Maintain<br>If main power supply is high temperature or other special cable, instruction manual should give clear indication of only use equivalent cable instead | Less than cable rating | P |

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| Clause | The need – test | Result- remarks | Verdict |
| 6 | Protect electric shock | Pass for protect electric shock | P |
| 6.1 | According to measure clause 6.2 and 6.3,test clause 6.4~6.12 | | P |
| 6.1.1 | Especial | | P |
| 6.2 | The definition of accessible parts according to clause 6.2.1~6.2.3 | | P |
| 6.2.1 | Basic check<br>Rigid testing paper brings to bear 10N for all surface, include bottom. | Pass | P |
| 6.2.2 | Vent up of danger live part should insert with long 100mm and diameter 4mm metal test pin. | | P |
| 6.2.3 | Vent of adjust control key should insert with diameter 3mm metal test pin | | P |
| 6.3 | Limit value of touchable parts<br>Voltage 、current 、electricity or energy between every two touchable should not exceed value of clause 6.3.21 in normal and clause 6.3.2 in single fault. | Pass | P |
| 6.3.1 | Normal value should not exceed clause 6.3.1.1~6.3.1.3 limit value…. | 24V DC power output | P |
| 6.3.1.1 | Voltage: 30V virtual and 42.4V Peak or 60V D.C | | |
| 6.3.1.2 | Current: 0.5mA virtual and 0.7mA Peak or 2mA D.C | | P |
| 6.3.1.3 | Capacitor limit for voltage exceed clause 6.3.1.1 value:<br>--------Voltage amount or less than 15Kv Peak or D.C, 45 electricity<br>-------Voltage exceed 15Kv Peak or D.C, 350mJ energy | | P |
| 6.3.2 | Single fault value | | P |
| 6.3.2.1 | Voltage should be 50V virtual and 70V Peak or 120V D.C | | P |
| 6.3.2.2 | Current for voltage exceed clause 6.3.2.1 should be 3.5mA virtual and 5mA Peak and 15mA D.C. | | P |
| 6.3.2.3 | Capacitor value see clause 6.3.2.3 chart 1 and 2 厖….. | | P |
| 6.4 | Protection in normal use | | P |
| | Basic insulation | Clearance distance comply with 6.7 | P |
| | Enclosure or barrier | Comply with Clause 8.1 | P |
| | Protect resistance | | N/A |
| | Check as following: | | P |
| | According to clause 6.2 | | P |

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|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| | According to 6.8 testing | | P |
| 6.5 | Protection for single fault condition | | P |
| 6.5.1 | Earth | | P |
| 6.5.1.2 | The resistance of earth connect device | <0.1ohm | P |
| 6.5.1.4 | Connect of measure instrument accessible parts | | P |
| 6.5.2 | Double insulation or reinforce insulation<br>Check the clearance distance and voltage withstand test | | P |
| 6.5.3 | Resistance of protect circuit | | P |
| 6.5.4 | Internal set<br>If the instrument intend to install into cabinet, there is no any live parts, do not need comply with relevant requirement | | P |
| 6.6.1 | Internal circuit insulation<br>If internal circuit may be change to live parts in fault condition, it should be insulated from other accessible | | P |
| 6.6.2 | External accessible should not be live parts | | P |
| 6.7 | Creepage distance and Clearance distance<br>Should less than value in appendix D | | P |
| 6.8 | Electric strength test<br>Check with withstand test | | P |
| 6.8.1 | Refer test point | | P |
| | Test unit cover with metal sheet area not less than 20cm | | P |
| 6.8.2 | Before test, the test unit place in ambient with humidity 92.5%±2.5, temperature 40℃±2℃, 48H, place in 4.3.1 clause condition 2h before voltage withstand test | | P |
| 6.8.4 | Test with voltage value specified in appendix D, should not break down | | P |
| 6.9 | Construction requirements for protect electric shock | | |
| | Should not connect only with soldering method for withstanding electric strength | | P |
| | The wire or screw loose or fall off should reduce the creepage distance and clearance distance | | P |
| 6.10 | Power cord | | P |
| | Power cord size and type should be applicable | | P |
| | Yellow/ green cover wire only use in earth circuit | | P |
| 6.10.2 | Permanently power cord connecting | | N/A |

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|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 6.10.2.1 | Cord entry | | N/A |
| | Should protect damage | | N/A |
| 6.10.2.2 | Strain relief should comply with following | | N/A |
| | Should secure cord directly with screw | | N/A |
| | Should have a knot | | N/A |
| | Should permit cord is push into instruments | | N/A |
| | After strain relief test, the displace should not more than 2mm, the test force according to table 2 | | N/A |
| 6.10.3 | Plug and connector should have applicable rating | | P |
| 6.11 | Accessible terminal | | N/A |
| 6.11.1 | Accessible terminals should have any protection,<br>Check with below methods:<br>Throw of f insulate layer 8mm of wire, the wire thread should not be near to accessible terminal | | N/A |
| 6.11.2 | Protect earth terminal | | P |
| | The capacity of protect terminal should less than conduct terminal | | P |
| | When power cord connect power supply, the protect terminal should be connected at first | | P |
| 6.12 | Disconnect the power supply | | P |
| | The instrument should have any disconnect all pole of power supply device such as switch, | | P |
| 7 | Protect mechanism hazard | | P |
| | Moving parts | | P |
| | Stability<br>Should not overturn when place in 10° incline | | P |
| 7.4 | Transit handle should withstand 4 times weight of instruments | | P |
| 8 | Impact, vibration | | P |
| | General requirements<br>After the test, check below item<br>Live parts should become accessible<br>Should any crack risk<br>Reduce creepage distance or clearance distance<br>Moving parts become accessible<br>Fire of risk | After the test, check below<br>item No this found<br>Live parts should become accessible<br>Should any crack risk<br>Reduce creepage distance or clearance distance<br>Moving parts become accessible<br>Fire of risk | P |
| 8.1 | Rigidity test: with diameter 12mm stick apply 30N force | | P |

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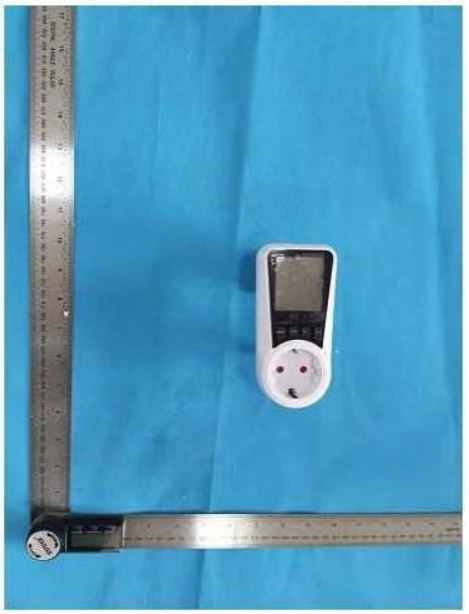
|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 8.2 | Impact test: test 0.5j energy three times for every parts | | P |
| 8.3 | Vibration test | | P |
| 8.4 | Drop test | | P |
| 9 | Heating or risk of fire | | P |
| 9.1 | Heating should lead to risk of fire under normal or single fault condition | | P |
| 9.2 | Temperature test | | P |
| | The temperature rise should not exceed values specified in table three | | P |
| 10 | Heat-resistant | | P |
| 10.1 | The instruments operate at 40C, no reduce creepage distance | | P |
| 10.2 | The no-metallic enclosure should withstand hi-temperature | | P |
| 10.3 | Heat-resistant of insulate material | | P |
| 11 | Resistant moisture or liquid | | N/A |
| | If clean method is specified by manufacturer, there is no risk of electric shock after clean procedure | | N/A |
| | If liquid fall off in equipment during normal operation, there is no risk of electric shock | | N/A |
| | Pour liquid from vessel no lead to danger in normal use | | N/A |
| 11.5 | Liquid leakage | | N/A |
| 11.5.1 | Equipment design for Liquid leakage should not from vessel、tube、airproof 枹et etc. Lead to danger | | N/A |
| 11.5.2 | Batteries design for electrolyte leakage should not shock | | N/A |
| 11.6 | Special protect set | | N/A |
| 12 | radiation protection 、sound pressure | | N/A |
| 12.1 | Ionisation radiation | | N/A |
| 12.3 | Ultraviolet radiation | | N/A |
| 12.4 | Microwave radiation | | N/A |
| 12.6 | Laser radiation | | N/A |
| 13 | Gas emit, exposed danger | | P |
| 13.1 | The instruments should emit hazard gas during normal use or single fault condition | | P |
| 13.2 | Risk of exposed | | P |
| | Components overheating should exploded | | P |

| EN 61010-1 | | | |
|---|---|---|---|
| Clause | The need – test | Result- remarks | Verdict |
| 13.2.2 | Cell set | | P |
| | Cell set fault condition should lead to risk of fire | | P |
| 14 | Components power cord, plug, AC socket, switch, fuse, PCB, plastic, internal wire, transformer, should approved separately | | P |
| | Motor winding temperature | | P |
| | When lock the rotator, winding temperature should not exceed the values specified in table 4 | | P |
| 14.7 | Transformer | | P |
| | Short circuit test | | P |
| | Over load test | | P |
| 15 | Inter-lock protector | | N/A |

Product photos：



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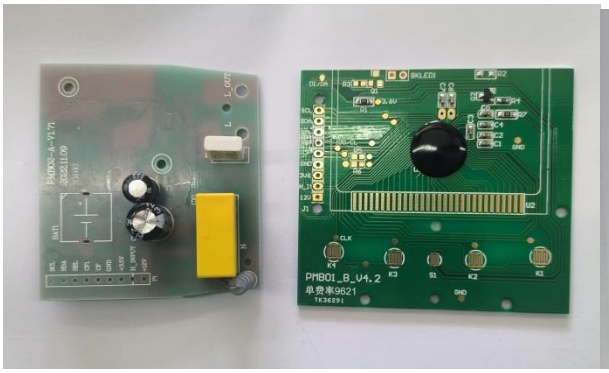


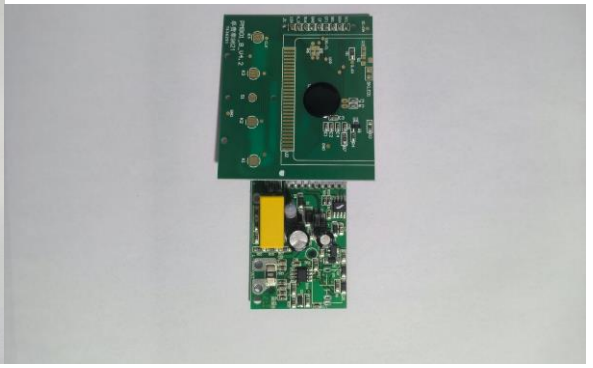

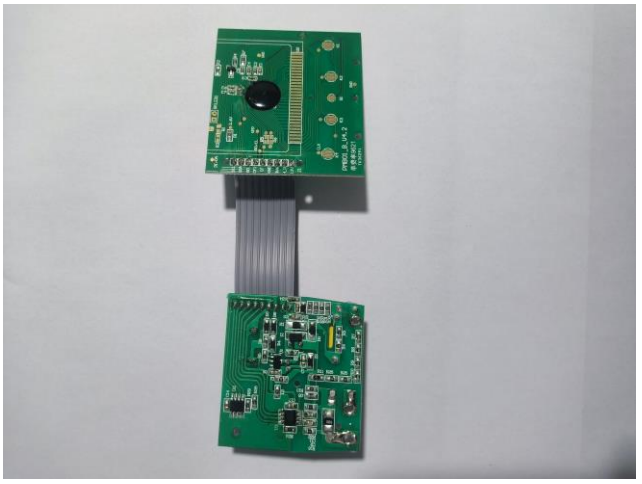

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