# Technical Construction File

## EN 60034-1:2010

## Rotating electrical machines Part 1:Rating and performance

**Report**

| | |
|---|---|
| Report reference No.....: | TLZJ20112327963 |
| Tested by (+signature).....: | Chris zhang |
| Reviewed by (+signature).....: | Tina Yang |
| Approved by (+ signature)..... : | Kevin Huang |
| Date of issue..... : | 2020/11/24 |

GLOBAL TESTING SERVICES CO., LTD. CERTIFICATION

**Testing laboratory**

| | |
|---|---|
| Name.....: | Shanghai Global Testing Services Co., Ltd. |
| Address.....: | Floor 2nd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai, China. |
| Testing location.....: | The same as above |

**Client**

| | |
|---|---|
| Name .....: | Wenzhou Weipu Motor Co., Ltd. |
| Address.....: | Block 12, East of Furniture Town, Huarong Road, Chanxi Village, Liushi Town, Yueqing City, Zhejiang, China |

**Test specification**

| | |
|---|---|
| Standard..... : | EN 60034-1:2010 |
| Test procedure .....: | CE-LVD |
| Procedure deviation..... : | N.A. |
| Non-standard test method.....: | N.A. |

**Test report form/blank test report**

| | |
|---|---|
| Test report form No..... | 60034-1 |
| TRF modified by..... | Shanghai Global Testing Services Co., Ltd |
| Master TRF.....: | PS_INFO\2-ELS.MES\REPORTS\CCA |
| Copyright blank test report.....: | This report is based on a blank test report prepared by **Shanghai Global Testing Services Co., Ltd** using information obtained from the TRF originator. |

| | |
|---|---|
| **Test item** | |
| Type of test object……..……...: | GEAR DOWN PERMANENT SPLIT CAPACITOR MOTOR |
| Trademark……..: | / |
| Test model and/or type reference……: | M5120-502 (120W, 90W, 60W, 40W, 25W, 15W, 6W) |
| Manufacturer……: | Wenzhou Weipu Motor Co., Ltd. |
| Address……: | Block 12, East of Furniture Town, Huarong Road, Chanxi Village, Liushi Town, Yueqing City, Zhejiang, China |
| Rated……: | 120W 220V 0.86A 8uFAC 50Hz 90-1350r/min 60Hz 90-1650r/min |
| Equipment mobility……..……: | Fixed appliance |
| Rated speed……: | / |
| Type cooling | Indirect |
| Primary coolant……..…: | No |
| Maximum ambient air temperature(℃) …: | / |
| IP degree of machine……...: | / |
| Mass of equipment(Kg)……...: | / |
| Secondary coolant……: | Air |
| Operating condition ……: | Continuous |
| Tested for IT power systems.....: | No |
| IT testing, phase-phase voltage (V)…..: | N.A. |
| Class of equipment…… : | F |
| **Testing** | |
| Date of receipt of test item……....: | 2020/11/17 |
| Date(s) of performance of test……..: | 2020/11/17 to 2020/11/24 |

| **Possible test case verdicts** | |
|---|---|
| Test case does not apply to the test object..... : | N(.A.) |
| Test object does meet the requirement..... : | P(ass) |
| Test object does not meet the requirement..... : | F(ail) |

**General remarks**

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

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

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

This report shall not be reproduced except in full without the written approval of the testing laboratory.

**Brief description of the tested sample(s):**

Ambient temperature :23℃， humidity:55%

Complete test was conducted on M5120-502 (120W, 90W, 60W, 40W, 25W, 15W, 6W)

120W 220V 0.86A 8uFAC 50Hz 90-1350r/min 60Hz 90-1650r/min

**Copy Of Marking Plate:**

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| EN 60034-1 | | | |
|---|---|---|---|
| 5 | Rating | | P |
| 5.1 | Assignment of rating | | P |
| | Select one of the classes of rating defined in 5.2.1 to 5.2.6 | Continuous running | P |
| | The designation of the class of rating shall be written after the rated output | | P |
| | The rated values shall refer to the supply terminals of the whole arrangement in accessory components | | P |
| 5.2 | Classes of rating | | P |
| 5.2.1 | Rating for continuous running duty | | P |
| 5.2.2 | Rating for short-time duty | | N |
| 5.2.3 | Rating for periodic duty | | N |
| 5.2.4 | Rating for non-periodic duty | | N |
| 5.2.5 | Rating duty with discrete constant loads and speeds | | N |
| 5.2.6 | Rating for equivalent loading | | N |
| 5.3 | Selection of a class of rating | | P |
| 5.4 | Allocation of outputs to class of rating | | P |
| | - for duty types S1 to S8, the specified values of the constant loads shall be the rated outputs | | P |
| | - for duty types S9 and S10, the reference value of the load based on duty type S1 shall be taken as the rated output | | N |
| 5.5 | Rated output | | P |
| 5.5.1 | DC generators | | N |
| 5.5.2 | AC generators | | N |
| 5.5.3 | Permanent magnet DC Brushless Motors | | P |
| 5.5.4 | Synchronous condensers | | N |
| 5.6 | Rated voltage | | N |
| 5.6.1 | DC generators | | N |
| 5.6.2 | AC generators | | N |
| 5.7 | Co-ordination of voltages and outputs | | N |
| 5.8 | Machines with more than one rating | | N |

| | | | |
|---|---|---|---|
| | For machines with more than one rating, the machine shall comply with this standard in all respects at each rating | | N |
| | For multi-speed Permanent magnet DC Brushless Motors, a rating shall be assigned for each speed | | N |
| | When a rated quantity (output, voltage, speed, etc.) may assume several values or vary continuously within two limits, the rating shall be stated at these values or limits. This provision does not apply to voltage and frequency variations during operation as defined in 7.3 or to star-delta connections intended for starting | | N |
| 6 | Site operating conditions | | P |
| 6.1 | General | | P |
| 6.2 | Altitude shall not exceed 1000m above sea-level | | P |
| 6.3 | Maximum ambient air temperature not exceed 40 ℃ | See the manual | P |
| 6.4 | Minimum ambient air temperature not be less than<br>-15℃ | See the manual | P |
| | The ambient air temperature shall be not less than<br>0℃ for a machine with any of the following: | | N |
| | - rated output greater than 3300kW per 1000min$^{-1}$ | | N |
| | - rated output less than 600W | | N |
| | - a commutator | | N |
| | - a sleeve bearing | | N |
| | - water as a primary or secondary coolant | | N |
| 6.5 | Water coolant temperature | Not exceed +25℃ nor be less than +5℃ | P |
| 6.6 | Storage and transport | | P |
| 6.7 | Purity of hydrogen coolant | | N |
| 7 | Electrical operating conditions | | P |
| 7.1 | Electrical supply | | P |
| | For three-phase a.c. machines | Three-phase | P |
| | For a.c. Permanent magnet DC Brushless Motors supplied from static converters<br>these restrictions on voltage, frequency and waveform do not apply | | P |

| | | | |
|---|---|---|---|
| 7.2 | Form and symmetry of voltages and currents | | P |
| 7.2.1 | AC Permanent magnet DC Brushless Motors | | P |
| 7.2.1.1 | AC Permanent magnet DC Brushless Motors rated for use on a power supply of fixed frequency | | N |
| 7.2.1.2 | AC Permanent magnet DC Brushless Motors supplied from static converters | | P |
| 7.2.2 | AC generators | | N |
| 7.2.3 | Synchronous machines | | N |
| 7.2.4 | DC Permanent magnet DC Brushless Motors supplied from static power converters | | N |
| 7.3 | Voltage and frequency variations during operation | | P |
| 7.4 | Three-phase a.c. machines operating on unearthed systems | | N |
| 7.5 | Voltage (peak and gradient) withstand levels | | N |
| 8 | Thermal performance and tests | | P |
| 8.1 | A thermal class in accordance with IEC 60085 shall be assigned to the insulation systems used in machines. | F | P |
| | It is the responsibility of the manufacturer of the machine to interpret the results obtained by thermal endurance testing according to the appropriate part of IEC 60034-18. | | P |
| 8.2 | Reference coolant | Air, indirect | P |
| 8.3 | Conditions for thermal tests | | P |
| 8.3.1 | Electrical supply | | P |
| 8.3.2 | Temperature of machine before test | Not differ from the coolant by more than 2 K | P |
| 8.3.3 | Temperature of coolant | Be tested at any convenient value of coolant temperature | P |
| 8.3.4 | Measurement fo coolant temperature during test | The value be the mean of the readings | P |
| 8.3.4.1 | Open machines or closed machines without heat exchangers | | N |
| 8.3.4.2 | Machines cooled by air or gas from a remote source through ventilation ducts and machines with separately mounted heat exchangers | | P |
| 8.3.4.3 | Closed machines with machine-mounted or internal heat exchangers | | N |

| | | | |
|---|---|---|---|
| 8.4 | Temperature rise of a part of a machine | See appended table | P |
| 8.5 | Methods of measurement of temperature | | P |
| 8.5.1 | General | | P |
| | Three methods of measuring the temperature of windings and other parts are recognized: | | P |
| | - resistance method | | P |
| | - embedded temperature detector method | | N |
| | - thermometer method | | N |
| 8.5.2 | Resistance method | | P |
| 8.5.3 | Embedded temperature detector method | | N |
| 8.5.4 | Thermometer method | | N |
| 8.6 | Determination of winding temperature | See appended table | P |
| 8.6.1 | Choice of method | | P |
| 8.6.2 | Determination by resistance method | | P |
| 8.6.2.1 | Measurement | Direct measurement at the beginning and the end of the test, using an instrument having a suitable range | P |
| 8.6.2.2 | Calculation | | P |
| 8.6.2.3 | Correction for stopping time | | P |
| 8.6.2.3.1 | General | | P |
| 8.6.2.3.2 | Short stopping time | | P |
| 8.6.2.3.3 | Extended stopping time | | N |
| 8.6.2.3.4 | Windings with one coil-side per slot | | P |
| 8.6.3 | Determination by ETD method | | N |
| 8.6.3.1 | General | | N |
| 8.6.3.2 | Two or more coil-sides per slot | | N |
| 8.6.3.3 | One coil-side per slot | | N |
| 8.6.3.4 | End windings | | N |
| 8.6.4 | Determintaion by thermometer method | | N |
| 8.7 | Duration of thermal tests | | P |
| 8.7.1 | The test shall be continued until thermal equilibrium has been reached. | Be continued until thermal equilibrium has been reached | P |
| 8.7.2 | Rating for short-time duty | | N |
| 8.7.3 | Rating for periodic duty | | N |

| | | | |
|---|---|---|---|
| 8.7.4 | Ratings for non-periodic duty and for duty with discrete constant loads | | N |
| 8.8 | Determination of the thermal equivalent time constant for machines f duty type S9 | | N |
| 8.9 | Measurement of bearing temperature | | N |
| 8.10 | Limits of temperature and of temperature rise | | P |
| 8.10.1 | Indirect cooled windings | Not exceed 80℃ | P |
| 8.10.2 | Direct cooled windings | | N |
| 8.10.3 | Adustments to take account of hydrogen purity on test | | N |
| 8.10.4 | Permanently short-circuited windings, magnetic cores and all structural components whether or not<br>in contact with insulation | | P |
| 8.10.5 | Commutators and sliprings, open or enclosed and their brushes and brushgear | | P |
| 9 | Other performance and tests | | P |
| 9.1 | Routine tests | | P |
| 9.2 | Withstand voltage test | | P |
| 9.3 | Occasional excess current | | P |
| 9.3.1 | General | | P |
| 9.3.2 | Generators | | N |
| 9.3.3 | Permanent magnet DC Brushless Motors | no damage. | P |
| 9.3.4 | Commutator machines | | N |
| 9.4 | Momentary excess torque for Permanent magnet DC Brushless Motors | | P |
| 9.4.1 | Polyphase induction Permanent magnet DC Brushless Motors and d.c. Permanent magnet DC Brushless Motors | | N |
| 9.4.2 | Polyphase synchronous Permanent magnet DC Brushless Motors | | N |
| 9.4.3 | Other Permanent magnet DC Brushless Motors | | P |
| 9.5 | Pull-up torque | | P |
| 9.6 | Safe operating speed of cage induction Permanent magnet DC Brushless Motors | | N |
| 9.7 | Overspeed | | P |
| 9.8 | Short-circuit current for synchronous machines | | N |
| 9.9 | Short-circuit withstand test for synchronous machines | | N |

| | | | |
|---|---|---|---|
| 9.10 | Commutation test for commutator machines | | N |
| 9.11 | Total harmonic distortion for synchronous machines | | N |
| 9.11.1 | General | | N |
| 9.11.2 | Limits | | N |
| 9.11.3 | Tests | | N |
| 10 | Rating plates | | P |
| 10.1 | General | | P |
| | The plates shall be made of durable material and be securely mounted | | P |
| | Be mounted on the frame of the machine and be located | | P |
| 10.2 | Marking | | P |
| | - the manufacturer’s name or mark | Wenzhou Weipu Motor Co., Ltd. | P |
| | - the manufacturer’s serial number, or identification mark | | P |
| | - information to identify the year of manufacture | | N |
| | - the manufacturer’s machine code | | P |
| | - for a.c. machines, the number of phases | | P |
| | - the number of the rating and performance standard | EN 60034-1 | P |
| | - the degree of protection | | P |
| | - the thermal class and the limit of temperature or of temperature rise | | P |
| | - the class of rating of the machine | | P |
| | - the rated output or range of rated output | | N |
| | - the rated voltage or range of rated voltage | | P |
| | - the rated frequency or range of rated frequency | | P |
| | - the rated current or range of rated current | | N |
| | - the rated speed or range of rated speed | | N |
| | - the permissible overspeed | | N |
| | - for d.c. manchines with separate excitation or with shunt excitation and for synchronous machines, the rated field voltage and the rated field current | | N |
| | - for a.c. machines, the rated power factor | | N |

| | | | |
|---|---|---|---|
| | - for wound-rotor induction machines, the rated open-circuit voltage between slip-rings and the rated slip-ring current | | N |
| | - the identification code of the static power converter | | N |
| | - the maximum ambient air temperature and water coolant temperature | | N |
| | - the minimum ambient air temperature | | N |
| | - the altitude for which the machine is designed | | N |
| | - for hydrogen-cooled machines, the hydrogen pressure at rated output | | N |
| | - the approximate total mass of the machine | | N |
| | - the direction of rotation, indicated by an arrow | | N |
| | - the connecting instructions | | N |
| | An additional plate for record of the normal maintenance | See the manual | N |
| 11 | Miscellaneous requirements | | P |
| 11.1 | Protective earthing of machine | | P |
| 11.2 | Shaft-end key | | N |
| 12 | Tolerances | | P |
| | Tolerances on declared values shall be as specified in table 20 | | P |
| 13 | Electromagnetic compatibility | | N |
| 13.1 | General | | N |
| 13.2 | Immunity | | N |
| 13.2.1 | Machines not incorporating electronic circuits | | N |
| 13.2.2 | Machines with brushes | | N |
| 13.4 | Immunity tests | | N |
| 13.5 | Emission tests | | N |
| 13.5.1 | Machines without brushes | | N |
| 13.5.2 | Machines with brushes | | N |

Type of equipment, model: GEAR DOWN PERMANENT SPLIT CAPACITOR MOTOR, M5120-502 (120W, 90W, 60W, 40W, 25W, 15W, 6W)

Details of:

View:

[X] general

[ ] front

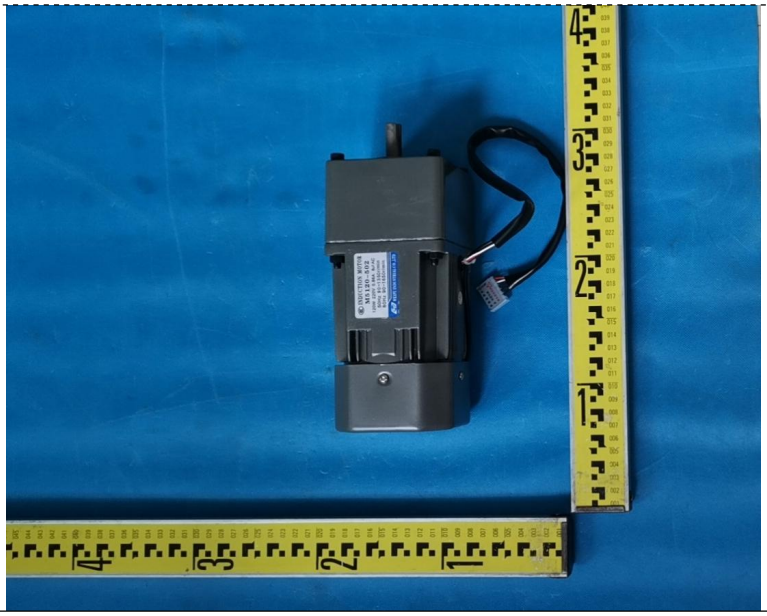
[ ] rear

[ ] right

[ ] left

[ ] top

[ ] bottom



Details of:

View:

[X] general

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View:

[X] general

[ ] front

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- End of Annex I -