

With our Standard Specification we offer you a means to judge maxon motors in the most important respects. To our knowledge it covers normal applications. The Standard Specification is part of our "General Conditions of Sale".

Electrical equipment must meet certain minimum requirements, which was introduced into the European market after 1.1.96. Small motors will be identified as components and will therefore represent no separate electrical equipment within the sense of the guidelines. Nevertheless the majority of the maxon motor program are already CE certified. Certifying the motors takes place during operation at no-load and in the new condition.



The CE sign means that the product conforms to EU guidelines and procedures designed to achieve conformity were carried out.

RoHs

All our products are built under EU directive 2002/95/EG.

Note to the Catalogue 2010/11:

maxon motor ag accepts no liability for the accuracy of the information contained in this catalogue, nor for any damages which may result directly or indirectly from the use of such information.

This disclaimer does not apply to wilful intent, gross negligence, and does not affect legislation governing product liability.

The Standard Specification No. 100 for maxon DC motor, maxon A-max and maxon RE-max

1. Principles

The **standard specification** describes tests carried out on the **finished motor and during the production process**. In order to guarantee our high quality standard, we check materials, parts and subassemblies through the manufacturing process and the complete motor. The obtained measurements are recorded and can be made available to customers if required. Random sampling plans are according to ISO 2859, MIL STD 105E and DIN/ISO 3951 (inspection by attributes, sequential sampling, variables inspection) as well as internal manufacturing controls. This specification always applies unless a different one has been agreed between the customer and maxon.

2. Data

2.1 **Electrical data** apply at 22° to 25°C. Data control within one minute running time.

Measurement voltage +/- 0.5 % for voltages $\geq 3V$ and $\pm 0.015V$ for voltages $\leq 3V$

No-load speed $\pm 10\%$

No-load current \leq maximum specified value

Sense of rotation cw = clockwise

Motor position horizontal

Notes: Measurement voltage may vary from the nominal voltage listed in the catalog. The no load current specified in the catalog is a typical value and not the maximum one. By connecting the red wires or if voltage is applied to the '+' Terminal, shaft rotation is CW (clockwise) as seen from the mounting end. For CCW running, the specified tolerance data may only be marginally exceeded.

Terminal resistance: Winding resistance is verified in the manufacturing process through spot checks on a representative basis. Terminal resistance is determined at product certification. It should be noted that terminal resistance depends on the rotor's rotational position. As transfer resistance depends on current density in graphite brushes, measuring resistance with an ohmmeter if the current is low does not give reasonable results. Too low a reading is produced with precious metal brush motors if the brushes bridge two commutator segments, thereby short-circuiting one coil segment.

Inductance is determined at product certification. Test frequency is 1 kHz. The motor's terminal inductance depends on frequency.

Commutation: An oscilloscope is used to check the neutral setting and test for electrical faults, such as interrupted winding or short-circuit between turns. Commutation displays for precious metal brushes and graphite brushes are not directly comparable. Precious metal brushes display a clear commutation picture which remains interference free up to the motor's recommended maximum speed, but with graphite brushes, this is only expected up to around one third of that. In addition, it should be noted that the con-

tact resistance of graphite brushes and the torque constant may change during the run-in period due to increased brush seating. As a result, no-load current and speed may drift marginally. The same effect may also be observed if motors are being operated under no-load condition over a longer period.

2.2 **Mechanical data** per outline drawing: Standard measuring instruments (for electrical length measuring DIN 32876, micrometer per DIN 863, dial indicator DIN 878, calliper per DIN 862, bore calliper DIN 2245, thread calliper per DIN 2280 and others) are used.

2.3 **Rotor imbalance:** Rotors are balanced according to standard data or customer requirements during manufacturing.

2.4 **Noise:** Tests are carried out for anomalies within a lot, on a subjective basis. Depending on speed, the motions in the motor cause noise and vibration of varying degrees, frequency and intensity. The noise level experienced with a single sample unit should not be interpreted as indicative of the noise or vibration level to be expected of future deliveries.

2.5 **Service life:** Durability tests are carried out under uniform internal criteria as part of product certification. A motor's service life essentially depends on the operating and ambient conditions. Consequently, the many possible variations do not allow us to make a general statement on service life.

2.6 Environmental influences

Protection against corrosion: Our products are tested during product certification on the basis of DIN EN 60068-2-30.

Coating of components: Surface treatment and coating procedures used by maxon are selected on the basis of their merits to resist corrosion. These treatments are evaluated at product certification according to their applicable standard.

3. Parameters that differ from or are additional to the data sheet can be specified and will be then a central part of our systematic testing as the customer's specification. Test/inspection certificates are issued by prior agreement.

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