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 seperate 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.

CE

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

If additional requirements need to be met, we shall cooperate with you to work out more detailed specifications.

Note to the Catalogue 2007/08:
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 ≥ 3 V)
No-load speed	+/- 10 %
No-load current	≤ maximum specified value
Sense of rotation	cw = clockwise
Motor position	horizontal

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: Representatively winding resistance is verified through random sampling instead. It should be noted that terminal resistance depends on the rotor's rotational position. The highest reading is recorded. No useful results are gained by measuring the resistance of graphite brushes on an ohmmeter on account of their current density-based transfer resistance. Too low a reading is produced with precious metal brush motors if a set of brush blades bridges two commutator segments, thereby short-circuiting one coil segment.
Commutation: The neutral position of the brushes is tested and checks for open or partially short-circuited windings for example are made using storage oscilloscopes. Commutation displays for precious metal brushes and graphite brushes are not directly comparable. Precious metal brush commutation display features clean traces 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 contact 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. Although every motor is fully adjusted and tested during manufacturing, the Quality Control Department rechecks these values through random sampling.

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 **Other data**
Rotor imbalance: Rotors are balanced according to standard data or customer requirements during manufacturing. The completely assembled motor permits only a subjective assessment which is done using the random sampling method.
Inductance is determined during the first sample test.
Measuring frequency 1 kHz.
Corrosion resistance: Our products are tested according to test climate 23/83-1 DIN 50015 at the first sample test.
Coating: Surface treatment and coating procedures used by maxon were selected on the basis of their merits to resist corrosion. Evaluations of these treatments are made according to their applicable standard, such as ISO 2082 or DIN 50017 KK.

2.4 **Noise:** Depending on speed the necessary motions in the motor cause noise and vibration of varying degrees, frequency and intensity. An objective assessment can only be made at great expense and with precise specifications. For this reason, maxon chooses to evaluate routinely, but only on a subjective basis and for extremes within a lot. 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 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. For this reason, maxon performs internal tests under uniform criteria during the initial sampling procedure.

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.

April 2005 edition / subject to change