

be in motion be in motion

**Commissioning
and Maintenance Instructions**

TAM 00621

DSD 45 - 100

Three-phase synchronous motor

Version: 05 / 2007

English

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1 General safety instructions

1.1 Safety

This electric motor has been constructed in accordance with the relevant safety standards and underwent an operational safety check before leaving our factory.

To ensure that it is commissioned and used correctly, please comply with the following:

- These Commissioning and Maintenance Instructions
- The enclosed safety and commissioning notes
- The technical documentation that accompanies the product
- The commissioning and safety notes provided by the manufacturer of the converter
- The national, local and system-specific regulations concerning your finished product.

We wish to draw your attention to the following hazards when using the product:

- Hazards resulting from
- Lifting and transport
 - Electrical power
 - Moving parts
 - Hot surfaces
 - Electromagnetic interference
 - Mechanical overload
 - Thermal overload

In the interests of avoiding personal injury and damage to property as well as minimizing residual risks, please read all of the safety instructions and, in particular, those that are marked with a symbol.



Risk of fatality due to electrical shock

Failure to observe can lead to fatal or serious injuries.



Warning about general dangers

Failure to observe can lead to serious injury or damage to property.



Warning about dangerous situation

Failure to observe can lead to damage to the system or peripheral equipment.



Do not touch

Failure to observe can lead to serious injury.



Action prohibited

Failure to observe can lead to serious injury.



Warning about hot surface

Failure to observe can lead to serious injury.



Electrostatically sensitive components

Failure to observe can lead to damage to the system or peripheral equipment.

1.2 Designated purpose

The electric motor must only be used for its designated purpose. In this context, the electric motor must only be used for the applications described in this technical documentation under strict observance of all the notes in these Commissioning and Maintenance Instructions.

All assembly, commissioning, maintenance and operating tasks must be carried out by qualified personnel only.

Within the context of these safety instructions, qualified personnel refers to persons who are trained and authorized in the specialized area and who are authorized to set up, assemble, commission and operate devices, systems and circuits under application of the applicable safety standards (IEC 364 / DIN VDE 0105).

Inappropriate conduct can result in serious **personal injury** and **damage to property**.

This **electric motor** has been designed for use **in industrial applications** and is subject to the following **standards** and **directives**:

Standards

EN 60034-1, EN 60034-5, EN 60034-6, EN 60034-7, EN 60034-9, EN 60034-11, EN 60034-14, EN 60204-1

Low Voltage Directive 2006/95/EC

The electric motors in this series fully comply with the requirements of the Low Voltage Directive 2006/95/EC.(Conformity)

Machinery Directive 98/37/EC

Electric motors constitute components for installation in machinery as defined by the Machinery Directive. Commissioning is not permitted until such time as the conformity of the finished product with this directive has been demonstrated (EN 60204-1 "Electrical Equipment of Machines").

EMC Directive 89/336/EEC


The operation of the electric motor for its designated use must comply with the protective requirements laid down in EMC Directive 89/336/EEC. The person setting up the system is responsible for ensuring correct installation (e.g. physical separation of signal lines and power cables, screened lines and cables, etc.). In the case of systems featuring power converters, the EMC notes of the power converter manufacturer must also be observed.

All national, local and system-specific regulations must also be observed!


The electric motor has been designed for the following **ambient conditions**:

- Ambient temperature: 0°C to +40°C
- Altitude: ≤1000 m above sea level
- Relative humidity: 10% to 80%


Please take note of any discrepancies between this information and the details specified on the nameplate or in the technical documentation. The conditions at the place of use must correspond to the details on the rating plate.

	<p>Using the unit in potentially explosive atmospheres is prohibited unless the unit has been expressly designed for this purpose (refer to additional notes). Furthermore, the area surrounding the electric motor must be free of combustible gas mixtures and hazardous concentrations of dust. Live and hot motor parts are inflammable and may cause serious injury and damage to property.</p> <p>If, in special cases, higher requirements are imposed – for use in non-industrial applications – (e.g. protection against contact with a child's fingers), these conditions must be met by the customer when installing the system.</p>
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Motor design with rare-earth magnets:

	<p>The rotors of the three-phase synchronous motors contain rare-earth magnets with high magnetic energy densities. High forces of attraction to ferromagnetic components occur in the vicinity of disassembled rotors; persons with pacemakers are in grave danger and data stored on electronic data media could be destroyed. Incorrect handling can result in injury when ferromagnetic parts are attracted by the rotor.</p>
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Thermal hazard:

	<p>Caution, risk of burns!</p> <p>Motor surfaces can reach temperatures in excess of 70°C. If necessary, fit guards!</p> <p>Temperature-sensitive parts, e.g. standard cables or electronic components, must not be placed on or fixed to the hot surfaces.</p> <p>Thermal overloading can destroy the winding and the bearing and even lead to the demagnetization of the rare-earth magnets. A thermal sensor should be used to monitor the temperature.</p>
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1.3 Prohibition of unauthorized modifications and changes



For safety reasons, unauthorized modifications and changes to the electric motor are forbidden. If such modifications/changes are necessary, please contact the manufacturer.

No safety devices may be dismantled or decommissioned when operating the electric motor.

2 Operating conditions

2.1 Product description

The electric motors in the “**DSD**” series are self-cooled three-phase synchronous motors with rare-earth magnets. These 8-pole motors are capable of excellent acceleration performance thanks to the low inertia of the rotor and the fact that output has been optimized accordingly.

When operated in conjunction with a motor-controlled pulse converter, these motors respond extremely well to speed and position control and are highly dynamic (DSD). Therefore, they are ideal for applications associated with machine tools and production machines (e.g. printing, packaging, textile machinery), as well as handling devices and robots.

2.2 Scope of supply

The consignment is assembled on an order-specific basis.

- The carrier must be notified immediately of any damage sustained during transport and identified on delivery.
- On delivery, please check that the ratings and motor type match your order data. In the event of apparent defects or incomplete delivery, the appropriate Baumüller office or the Baumüller head office in Nuremberg should be notified immediately.

In either of the above cases, commissioning must not take place until the error has been rectified by a specialist.

2.3 Nameplate

The nameplate is used to identify each electric motor. The respective motor number is clearly shown on the nameplate and is central to Baumüller's internal tracking procedures. It must be possible to read the nameplate at all times. Never remove the nameplate from your motor.

Nameplate

data:

Art. no.:	.....	Article number
Mot. no.:	.....	Motor number
Type:	DSD...	Motor type/Description
Uzk:	.....V	DC link voltage
Io:	.....A	Standstill current
Mo:	.....Nm	Standstill torque
nN:	.....rpm	Rated speed
PN:	.....KW	Rated power
Insul. class:	F	Insulation material class
Mode:	.....	Motor operating mode
IP:	.....	Motor protection type

2.4 Technical data

Designs (EN 60034-7)	IM B5 (IM V1, IM V3)
Type of protection (EN 60034-5)	IP 65
Motor housing	IP 64 (with shaft sealing ring IP 65 as an option)
Shaft exit	IP 54
Fan type of protection	Only up to IP 65
Terminal box	
Cooling method (EN 60034-6)	Standard: IC 410 Completely enclosed motor design Self-cooled, no fan Optional: IC 416 from shaft height 56 Completely enclosed motor Surface-cooled, with fan Air flow direction from motor NDE to DE
Electrical connections (see Appendix)	
Main connection	Standard: 8-pin connector: Shaft height 45 to 56 Terminal box: Shaft height 71 to 100 Optional: Terminal box: Shaft height 56 8-pin connector: Shaft height 71 to 100
Control connection	Resolver: 12-pin connector SinCos encoder: 12/17-pin
Brake (as an option)	Main connection
Thermal sensor	Resolver: Control connection SinCos encoder: Main connection
Thermal motor protection (EN60034-11)	Thermal sensor KTY84 in stator winding
Winding insulation (EN 60034-1)	Thermal class F
Ambient temperature	0°C... +40°C
Altitude (EN 60034-1)	≤ 1000 m above sea level
Intermediate storage	-30°C...+60°C (+85°C, see Section 2.5)
Bearings	Rolling-contact bearings with grease lubrication
Calculated bearing life	20,000h (approximate value)
Vibration severity (EN 60034-14)	Class A (previously N)
Vibration-resistant (EN 60068-2-6)	Radial 3g (10 Hz to 100 Hz) Axial 0.5g (10 Hz to 100 Hz)
Holding brake	Option
Actual speed encoder	Standard: 2-pole resolver (High-quality version on request) Optional: SinCos encoder

For additional technical data, please refer to technical product list DSD 45-100, which is available from our website: www.baumueller.de/e_index.htm - Download- Technical documentations


Please request the relevant documentation if necessary.

Attention!

If the electric motor supplied is not a standard type as per the technical list or if special contractual arrangements have been made, there may be technical differences to these Commissioning and Maintenance Instructions. In this case, please request the related technical supplements.

2.5 Transport, intermediate storage

Transport:

	<p>Suitable load suspension equipment must be used, e.g. belts, slings, etc. The motor's lifting lugs can also be used for lifting (if present).</p> <p>The motor connectors must not be used as a shipping brace or lifting lug.</p> <p>The regulations of the relevant countries must be adhered to during transport. Lifting devices, transport and load suspension equipment must comply with the regulations.</p>
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Baumüller “DSD” series electric motors weigh approx. **60kg**. For details of their exact weight, please refer to the technical documentation that accompanies the product.

The motor shaft and the connection surfaces must be protected against corrosion. The motor may only be transported with a shaft protection cover and damage to the motor shaft must be avoided.

Intermediate storage:

If a motor is not to be commissioned immediately after delivery, it should be stored inside a building in a dry, dust-free and low-vibration room ($V_{\text{eff}} \leq 0.2\text{mm/s}$).

The electric motors can be stored for max. 2 years at -30°C to $+60^{\circ}\text{C}$. Higher storage temperatures up to a max. of $+85^{\circ}\text{C}$ are permitted, but this can, however, lead to premature ageing of the seals. Direct exposure to sunlight, UV light and ozone also ages the seals prematurely and must be avoided!

Please note that the warranty periods commence from the date of delivery. For this reason, we recommend that storage periods be kept to a minimum.

2.6 Installation conditions, cooling details

Surroundings:

The motor can be installed in roofed rooms with dusty or damp ambient conditions and normal climatic conditions. Aggressive, corrosive, abrasive and plastic-dissolving solutions should be kept well away from the motor and the air that is used to cool it.

If the motor is to be installed outdoors, you must consult the manufacturer.

Cooling details:

For ambient conditions, see **Section 2.4** and the technical documentation that accompanies the product.


Cooling method IC 410 – Self-cooling without a fan.

Cooling method IC 416 – Surface cooling with a fan.

The following must be observed:

- The installation conditions must not impair thermal convection and radiation.
- The cooling air used for forced ventilation must be able to flow in freely and the hot air must be able to flow out freely. The hot exhaust air must not be sucked back in.
- A clearance of at least 100 mm must be observed in relation to neighboring machine parts.
- If installed in very dirty locations, the housing surface and airways must be cleaned regularly.

2.7 Balancing, vibration

	<p>Do not subject the shaft and bearings to impacts.</p> <p>When assembling and disassembling output elements, no axial forces must be applied to the motor.</p> <p>The measures generally required for the protection of output elements against physical contact must be implemented.</p> <p>If a motor is commissioned without an output element, the key must be secured to prevent it from sliding out.</p>
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Balancing

On standard versions, the rotors are dynamically balanced with half-keys. (to EN 60034-14/ISO 1940)

NOTE: Please note the code on the shaft end face indicating the type of balancing:
H = Half-key balancing (standard version)
F = Full-key balancing (special version)

Output elements:

When assembling the output element, pay attention to the relevant type of balancing. The output elements must themselves be balanced in accordance with ISO 1940.


Suitable jigs must always be used for fitting or removing output elements (e.g. clutch disk, gear wheel, pulley).

- Use threaded hole in shaft end.
- During removal, use intermediate washers to protect the shaft mechanically.
- Heat output elements as required.

Attention:

- On shaft versions without a key, the output elements are to be fastened to the output shaft **with the aid of suitable clamping sets**.
- On shaft versions with a key, care should be taken to ensure **that the output elements sit correctly on the shaft shoulder**. Note: Output element chamfer/radius and shoulder shaft radius must match up.


Vibration:

	<p>The site vibration response of the system, which is determined by the output elements, mounting conditions, alignment, installation and effects of external vibrations, may cause the vibration values at the motor to increase.</p> <p>In the interest of ensuring reliable motor operation and a long bearing service life, the permissible vibration values specified by EN 60034-14 must not be exceeded. Under certain circumstances, the rotor may need to be fully balanced with the output element (in accordance with ISO 1940).</p> <p>The vibration value after assembly must not exceed the permitted rates of acceleration (see Section 2.4 Technical data).</p> <p>Should you have any doubts concerning deviations from normal operation – e.g. rise in temperature, noises, vibration - switch off the motor. Identify the cause and, if necessary, contact the manufacturer.</p>
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3 Mounting

3.1 Safety instructions

Before mounting:

	<p>Never mount or commission a damaged electric motor.</p> <p>Never install the electric motor in a damaged machine.</p> <p>Before installing the electric motor, make sure it is suitable for your machine.</p>
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Before mounting:

	<p>Only mount the motor using the fastening features provided.</p> <p>The motor should not be exposed to knocks, e.g. with a hammer, or shocks during mounting.</p> <p>Make sure that all covers and safety devices are in place.</p> <p>All safety devices must comply with the latest regulations (e.g. EN 60204).</p>
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3.2 Installation, fixing


Prior to and during mounting, check that

- The motor is not damaged (e.g. the shaft sealing ring must not be damaged in any way as a result of contact with sharp or pointed objects).
- The motor is not mounted within the danger zone of other equipment.
- The motor is being used for the designated purpose (see **Sections 1.2 and 2.4**).
(Observe nameplate data, warning labels and signs.)
- All traces of anti-corrosion agents have been removed from the shaft end.
If you are using standard solvents such as acetone or petroleum ether, make sure that the shaft sealing ring does not get wet!
- The motor has been designed for the local ambient conditions and environmental influences (see **Section 2.4**).
- The compartment in the machine is suitable for the cooling method employed for the electric motor (see **Section 2.6**).
The motor must be installed in such a way as to allow adequate heat dissipation via the surfaces of the housing and motor flange.
- The motor can be mounted and operated using fastening features and connection data provided.
The mounting dimensions of the motor and the tolerance details are provided in the technical documentation that accompanies the product.
When mounting the motor, make sure that the flange surface connects properly and evenly. The supports and bearing surfaces must be clean and undamaged. They must be precisely aligned with the connecting shafts to prevent the bearings, shafts and housing being exposed to damaging loads as a result of misalignment. When tightening the flange fixing screws (min. property class 8.8), make sure that the flange connection is not distorted.
- No liquid can penetrate the upper bearing when installing vertically with the shaft end facing upwards.
- The permissible radial forces as defined by the operating characteristics in the technical documentation are not exceeded (if necessary, contact Baumüller).
The motor manufacturer must always be contacted in the case of axial forces.
- The brake (available as an option) can be released once the operating voltage is applied (audible operating noise).
- The rotor rotates smoothly without a scraping sound.
In the case of motors with an integrated brake, release the brake first.

- The design of the motor and encoder cables complies with the details in the technical documentation that accompanies the product.
- The output and input elements are secured.



3.3 Electrical connections

Important notes:

	<p>All work must be carried out by specially trained personnel.</p> <p>Work may only be carried out when the system has been de-energized and secured against unintentional restarting (including auxiliary circuits).</p> <p>Work may only be carried out once the motor has come to a standstill. In the case of three-phase synchronous motors with permanent-magnet excitation, a voltage of > 60 V can occur at the motor terminals when the rotor is turning.</p> <p>Regulations pertaining to work on electrical installations must be observed!</p>
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The safety regulations governing work on electrical installations as laid down by EN 50110-1 (DIN VDE 0105-100) must be observed:

- Isolate
- Secure against unintentional restarting
- Verify safe isolation from the supply
- Ground and short
- Cover or fence off adjacent live parts

	<p>The electric motor may only be operated in conjunction with an appropriately designed and configured converter. Connecting the motor directly to the three-phase system can destroy it.</p> <p>Ensure that the phase sequence and the pin assignment are correct!</p> <p>Electrical connections, protective conductor connections and screen connections (when using screened cables) must be permanently secure!</p>
	<p>Never touch the contacts of the encoder or thermal sensors with your hands or with tools that are electrostatically charged. The encoder and the thermal sensors are electrostatically sensitive components.</p>

Electrical installation:

- Whoever is responsible for installing the system is also responsible for ensuring correct electrical installation.
- The motor data on the nameplate must be observed.
- Connection cables and connectors must be correctly rated for the prevailing voltages and currents and must be suitable for the method of installation employed.
- The motor and associated modules (brake, encoder, fan, etc.) must be connected in accordance with the wiring diagrams (see **enclosed wiring diagrams** and **Appendix**)
- Screened power and encoder cables must be used to protect against electromagnetic interference from motor cables and their effect on the encoder and control systems. Please refer to the EMC notes provided by the converter manufacturer.
- In the interest of ensuring operational safety, we recommend that you use connecting cables assembled by Baumüller (see Technical Product List).
- Prior to connection, the female connectors, the male connectors and the terminal boxes must be checked for damage, corrosion, dirt and dampness.
- Make sure that the screwed connections are correctly located and secure, as well as the seals and sealing surfaces of the connectors/terminal box, so that the required type of protection can be ensured.

- Connectors and terminal box connections must not be exposed to mechanical stress. If necessary, provide strain, shearing, twist and anti-kink relief.

If the power is being connected via a terminal box, you must ensure that


- When the insulation is stripped off the ends of the wires, the insulation remains close to the cable shoe or terminal. Protruding wire ends must be avoided at all costs.
- The cable shoes used match the dimensions and cross-sections of the terminals and wires.
- The screwed connections for the electrical connections are tightened to the stipulated torque (see **Appendix**)
- The type of protection is retained.

Note: Any cable entries that are not required must be sealed with sealing elements. The sealing elements must be fully functional and undamaged when the terminal box is closed.



4 Commissioning, operation

4.1 Safety instructions


Working on the electric motor:

	<p>Work must not be carried out on the electric motor until the motor has come to a standstill, is electrically isolated and has cooled off. Any connections, such as screw connections, that are loosened while working on the motor must be tightened again prior to commissioning.</p> <p>When carrying out work on the motor, please observe the technical instructions and notes in the relevant chapters of these Commissioning and Maintenance Instructions.</p> <p>Attention: If the optional holding brake is fitted, it must not be used to secure anything while working on the motor (e.g. for retaining loads)!</p>
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Risk of fatality due to electrical shock:

 	<p>Make sure that the motor is electrically isolated and de-energized.</p> <p>Never disconnect the motor connections during operation.</p> <p>Only connect measuring instruments when the motor is isolated from the supply and completely de-energized.</p> <p>Only commence work on the motor connections when you are sure the motor is electrically isolated and there is no voltage flowing.</p> <p>During operation, there is a potential difference across the motor terminals/contacts and the motor windings. Never touch these modules/elements while the motor is in operation.</p>
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Dismantling safety devices:

	<p>The electric motor must not be operated until the safety devices have been mounted.</p> <p>On dismantling safety devices during commissioning, ensure the motor is taken out of operation.</p> <p>Remount the safety devices immediately after commissioning is completed.</p>
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Danger on physical contact:


	Make sure that the electric motor has come to a standstill and is secured against accidental restarting before you touch it.
	Only touch the output shaft when it is de-energized and the motor has come to a standstill. Otherwise, there is a risk due to the rotating rotor. Danger of burns! Never touch the motor housing when the motor is running at rated load. Motor surfaces can reach temperatures in excess of 70°C .

4.2 Checks prior to commissioning

- The drive is free of damage and is not located within the danger zone of other equipment
- The motor is correctly aligned and fastened. All screwed connections are correctly tightened.
- All the appropriate safety devices (mechanical, thermal and electrical) are mounted.
- The motor connections have been made correctly.
- The wires are not in contact with the surface of the motor.
- The protective ground has been implemented correctly and its function checked.
- The drive does not lock (release brake, if present).
- Emergency stop functions have been checked.

4.3 Commissioning, operation

Note on brake function (if present):

	The brake has been designed to serve as a holding brake with emergency stop function (power failure, emergency stop). It must not be used as an operating brake.
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Commissioning must only be carried out by qualified personnel.
Please refer to the commissioning instructions for the converter.

Checks during commissioning:





- Release brake if applicable.
- Has the function of all motor modules (e.g., brake, encoder, fan, etc.) been checked and are they being used in appropriate conditions?
- Have all electrical and other connections been made correctly and tightened? (**Please observe wiring diagrams, see Appendix**)
- Have all protection measures that eliminate the possibility of contact with live parts, hot surfaces, rotating and moving parts, and modules been observed and are these measures fully functional?
- Have all output elements been mounted and adjusted in accordance with the manufacturer's instructions?
- Are measures in place to ensure that the max. permissible speed n_{\max} of the motor cannot be exceeded? The max. permissible speed n_{\max} is the highest permitted operating speed for short-time duty.

Checks during operation:

- Watch out for unusual noises.
- If scraping, scratching, grinding or other noises occur, stop the drive immediately and locate the cause.
- Check the motor surface and connection cables for dirt, e.g., layers of dust, oil deposits, dampness, etc.
- Check the maintenance intervals.

4.4 Malfunctions in operation

Safety instructions:

	Troubleshooting, including rectification of any faults, may only be undertaken by qualified personnel.
	Do not disconnect any of the safety devices – even during test runs
	Only disconnect and connect cables when electrically isolated and secured. Observe the 5 safety rules for "Isolation" (see Section 3.3).
	Beware of hot surfaces!

In the event of malfunctions in operation always

- Refer to the operating instructions for the machine/system.
- Refer to the operating instructions for the converter.
- If necessary, contact the manufacturer of the motor or converter.

Keep the following parameters to hand so that you can refer to them:

Nameplate data

Type and scope of the malfunction; Circumstances surrounding the malfunction

Application data (torque cycle, speed and forces over time; ambient conditions)


You may find the following selection of possible causes helpful during the fault rectification process:

Malfunction	Cause	Remedy
Motor does not start	No controller enable Controller error, encoder error Brake does not release Brake faulty No power supply Rotating field	Activate controller enable Read out error list on converter or controller, rectify error Check control, connection and power supply Have repaired by manufacturer Check connections and power supply Check phase sequence. If necessary, replace the connecting cables
Uneven running	Insufficient screening on connecting cables Controller parameters too high	Check screening connection and grounding Optimize controller parameters
Vibrations	Coupling elements or driven machine poorly balanced Drive train not aligned properly Fastening screws loose	Rebalance Realign machine set Check and tighten screwed connections

Malfunction	Cause	Remedy
Running noises	Foreign matter in motor Damaged bearing	Have repaired by motor manufacturer Have repaired by motor manufacturer
Motor overheats Motor temperature monitoring is activated	Drive overloaded Motor surface/airways dirty Has been installed in an area that does not allow enough space Brake not releasing fully – brake dragging	Check motor load and compare with nameplate Clean motor surface/airways Check motor has been installed in acc. with Sections 1.2 and 3.4 Have repaired by motor manufacturer
Current consumption too high, motor torque too low	Indexing angle incorrect	Check indexing angle and adjust if necessary

5 Inspection and maintenance

Working on the electric motor:

	<p>Work must not be carried out on the electric motor until the motor has come to a standstill, is electrically isolated and has cooled off. Any connections, such as screw connections, that are loosened while working on the motor must be tightened again after the inspection and maintenance work.</p> <p>When carrying out work on the motor, please observe the technical instructions and notes in the relevant chapters of these Commissioning and Maintenance Instructions.</p> <p>When carrying out maintenance work, observe the same safety instructions that apply to commissioning of the motor (see Section 4.1)</p> <p>Attention: If the optional holding brake is fitted, it must not be used to secure anything while working on the motor (e.g. for retaining loads)!</p>
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5.1 Inspection

Depending on how dirty the site is, cleaning will have to be carried out regularly to ensure an adequate level of heat dissipation on a continual basis.

If a brake has been installed as an option, certain wear limits apply (e.g., max. perm. operating air gap, limited number of emergency braking operations). The brake's current wear status should be checked regularly. As soon as the permissible wear limits are reached, the brake must be replaced (see **Section 5.2**)

If a shaft sealing ring is installed as an option, you will need to check it regularly to ensure that it is functioning correctly (check for leaks).

5.2 Maintenance

The service life of the bearings and sealing elements can vary greatly depending on the operating conditions, (e.g., operating mode, temperature, speed and load).

Assuming that operation is trouble-free, we generally recommend the following maintenance procedures:

- Replacement of the bearings after 20,000 operating hours (the bearings are designed for a calculated service life of 20,000 running hours)
- Replacement of the shaft sealing ring (if present and no leaks have been identified in the course of previous inspections) after approximately 5000 operating hours.

If a brake is installed as an option, it must be replaced as soon as the wear limits are reached.

Maintenance work must be carried out by Baumüller or a specialist company that is commissioned by Baumüller.

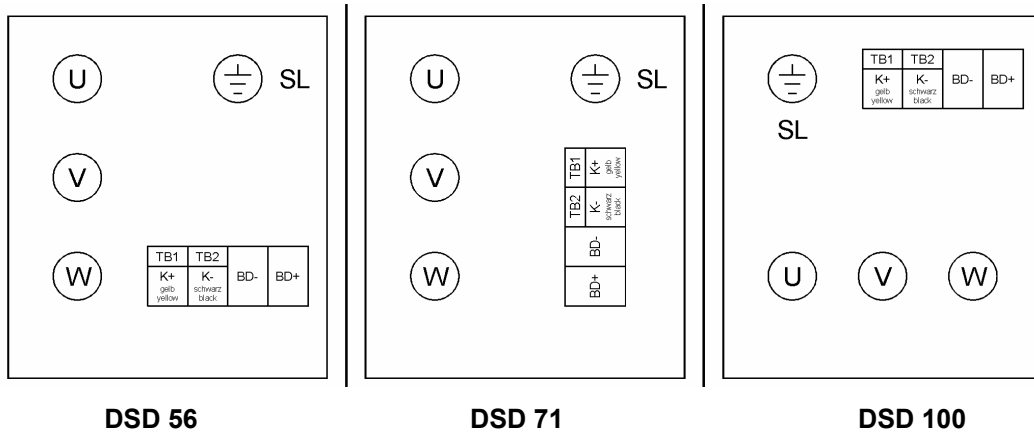
6 Disposal

The motor must be disposed off in accordance with the national and local regulations within the framework of the normal recycling process.

The encoder electronics (if a SinCos encoder has been installed as an option) must be disposed of in the proper manner as electronic waste.

7 Appendix

Main connection with terminal box – Terminal marking:



Terminal assignment/main connection (DSD with thermal sensor and brake)

Table 1 provides an overview of the terminal box cable entries and main connection terminals plus the associated tightening torques.

We recommend the use of EMC cable glands for the cable glands on the cable entries.

When tightening the terminal screw, we recommend supporting the conductor so that the terminal board is not subjected to any torsional forces.

Motor size	Cable entry	Number of main connection terminals	Tightening torques for terminals [Nm]
DSD 56	1 x M 20 + 1 x M 16	3 x M4	1.2
DSD 71	1 x M 25 + 1 x M 16	3 x M 6	3.0
DSD 100	1 x M 40 + 1 x M 16	3 x M 8	6.0

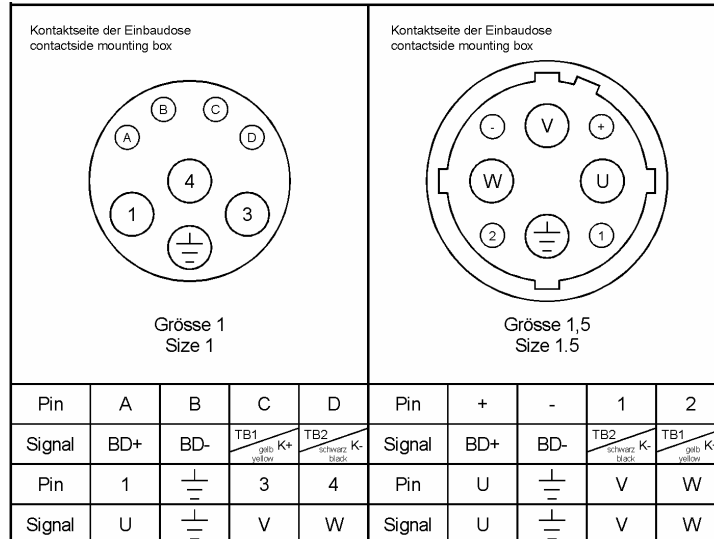
Table 1: Terminal box designs - Standard

Other cable entries and terminals available on request.

Main connection with connector (option)- Pin assignment:

The motor standstill current I_0 determines the connector size.

Connector size 1: I_0 up to 15 A; Connector size 1.5 : I_0 up to 50 A

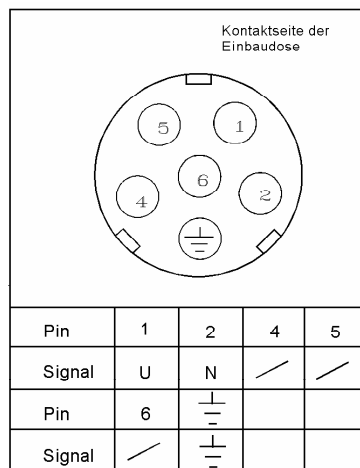


Pin assignment/main connection (DSD with thermal sensor and brake)

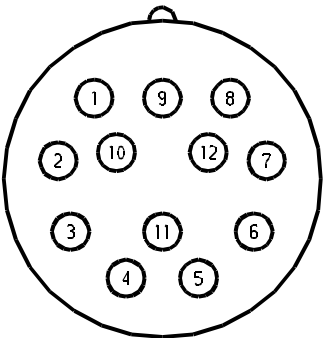
Note: If a resolver is being used, the thermal sensor's **K+** and **K-** signals are routed via the encoder cable as standard (see pin diagram: resolver connection).

With all other encoder and brake solutions, the thermal sensor signals are routed via the connector main connection/terminal box main connection (see pin assignment/wiring diagram above).

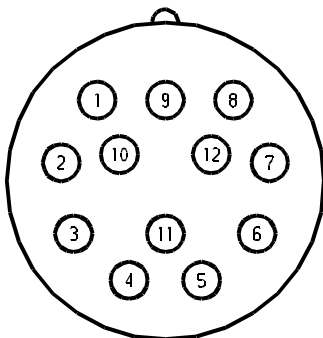
Fan connection with connector – Pin assignment:



Signal connection: Resolver with KTY 84 – Pin assignment

	Pin	Signal
 <p>View on contact side of the female connector</p>	1	cos -
	2	
	3	
	4	
	5	sin -
	6	sin +
	7	K-
	8	cos +
	9	K+
	10	Ref +
	11	
	12	Ref -

Signal connection: SRS/SRM50 SinCos encoder (made by SICK) – Pin assignment

	Pin	Signal
 <p>View on contact side of the female connector</p>	1	ref cos
	2	+ 485
	3	
	4	
	5	sin
	6	ref sin
	7	- 485
	8	cos
	9	Screening
	10	Gnd
	11	
	12	+ U

Other encoder types: Pin assignment in accordance with enclosed wiring diagram/tech. documentation

Warranty and liability

All the details in this documentation are provided by way of customer information. They are not legally binding, are subject to a process of continuous development and are updated by our editing staff on a continual basis. Warranty and liability claims against Baumüller Nürnberg GmbH are excluded, particularly where the loss or damage is caused by one or more of the following:

- You have not followed the instructions in this documentation.
- You have not used the system for its designated purpose.
- You have
 - Mounted, installed, commissioned or operated the system incorrectly or have not carried out the required maintenance
 - Permitted the system to be mounted, installed, operated and/or maintained by unqualified or insufficiently qualified personnel.
 - Overloaded the system
 - Operated the system with
 - Faulty safety devices
 - Safety devices that were incorrectly fitted or not fitted
 - Safety devices or protective devices not in working order.
 - Not operated the system in the stipulated ambient conditions.
- You have modified the system without the written approval of Baumüller Nürnberg GmbH.
- You have not observed the instructions concerning maintenance in the component descriptions.
- You have not monitored parts subject to wear sufficiently.
- You have failed to carry out a repair correctly.
- You have combined the system with products from other manufacturers in an improper manner.
- You have combined the drive system with faulty and/or incorrectly documented products from another manufacturer.

The "General Conditions of Sale and Delivery" Version 1.1 of February 15, 2002 or the latest version drawn up by Baumüller Nürnberg GmbH shall always apply.

These are available to you at the latest on the conclusion of the contract.

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