

OPERATING INSTRUCTIONS Translation





Süd-Electric Explosion-Proof Axial Fans

- **Model series MD - _____ - ____-X (standard models)**
- **Model series MD - _____ - ____-W (with protection guard)**

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Safety information

- Süd-Electric fan motor units with explosion protection  II 2 G Ex e II T or  II 2 D Ex tD A21 IP64 T 125°C are not ready-to-use products and can only be used when built into ventilation devices or when safety is ensured by using safety equipment in accordance with DIN EN 13857 or by other protection measures! The temperature class is to be found on the corresponding EU prototype verification certificate.
 - Assembly and electrical installation must be carried out by trained staff only, who observe the **respective regulations**.
 - Süd-Electric motor units and fans are constructed according to the standards EN 13857:2008, EN 60034-1:2004, EN 60079-0:2004, EN 60079-7:2007, EN 61241-0:2006, EN 61241-1:2004, EN 13463-1:2001, EN 13463-5:2003, EN 14986:2007 and the guideline 94/9/EG.
 Motor unit marking  II 2 G Ex e II T... or  II 2 D Ex tD A21 IP64 T 125°C
 It is therefore permissible to use motors with gases, mist vapours, mist or mixtures thereof in potentially explosive areas of zone 1 and 2 as well as in dusty conditions in potentially explosive atmospheres of zone 21 and 22. Gases, mist vapours or dust can only be mixed with air under normal pressure and oxygen content.
 - The permissible ambient temperature is - 20°C + 40°C. Deviating ambient temperatures can be found on the nameplate and the respective data sheet of the EU prototype verification certificate.
 - Performance data are based on motor cooling without fan impeller.
 - According to guideline 94/9/EG to avoid breakdown and to protect the motor, an electrical motor protection device in accordance with EN 60079-14:2004 must be employed. This must be set up based on the rated current and its tripping characteristic ¹⁾ must lie **under** the switch-on current and t_E time for the respective temperature class. Should the motor be operated according to the performance plate data using Delta connection, the motor protection devices must be situated on the main feed line in the case of Delta connection and must guarantee protection against overload and phase outage. They must also recognise machine unbalance.
- 1) The tripping characteristic must be available at the place of operation.

The motors are set up for continuous operation with easy start-up and not suitable for frequent start-up.

Safe run-up (within the time t_E) is basically guaranteed on all Süd-Electric fan motor units.

- The motor must be employed in accordance with the regulations and only for the purpose set out in the order!
- Planners, manufacturers and operators are responsible for the correct and safe assembly and operation of the motor and its components (e.g. fan impeller)!
- Safety components, e.g. protection guards, must not be removed, bypassed or made inoperational!
- Please see operating conditions!

Compliance with EMC Directive 2004/108/EG has been observed.

General description

- Süd-Electric motors with explosion proof design are to be used to run axial fans in combination with Süd-Electric fan impellers.
The installation of certificated fan impellers of other manufacturers is only permitted when they have been adjusted to the performance of the motor.
- All motors are balanced on two levels in accordance with DIN ISO 1940, Part 1 with full key.

Transport, storage

- Süd-Electric fans are packaged at the factory according to the agreed mode of transport.
- Motors should be transported either in their original packaging or using the drilled holes in the motor housing (for use with eyebolts, using suitable lifting tools).
- If transported manually, please take into consideration how much a person can lift and carry.
- Avoid bumps and knocks.
- Please check for damage to packaging or motor.
- Store motors in a dry and weatherproof place in their original packaging or protect them from dirt and weather until needed for assembly.
- Avoid extreme temperatures.
- Make sure motors are not in storage for too long (we recommend a maximum of one year) and check if the motor works properly before assembly.



Windings tend to soak up wetness, especially in long-term storage and under uncontrollable conditions (i.e. fluctuation of humidity and temperature). That is why in such cases the insulation's efficiency has to be tested with suitable measurement tools *before* initiating it. If necessary the winding has to be dried.
Insulation resistance: At least 1000 Ohm/Volt (Motor rated voltage).

Assembly

Assembly, electrical connection and commissioning are to be performed by trained staff only. Make sure the respective operating conditions are adhered to and that the stipulations of the system manufacturer or plant engineer are observed. If not, Süd-Electric provides no guarantee on motors and accessories!

- Please note for all fans:
 - Do not install without adequate support.
 - Make sure moving parts do not rub or knock stationary parts due to distortion or displacement.
 - No force should be used (levering, bending).
 - Mount using all fixture points and suitable fixtures.
 - Execute electrical connection according to circuit diagram (either provided as loose document or glued to the lid of the terminal box). The circuit diagram must be accessible at the place of operation.
 - Motor connecting cable:
 - The connection cross section is to be measured according to the recognised rules of engineering and by taking into consideration the EC Type Examination Certificate. Please note that a decreased ampacity due to ambient temperature or installation circumstances may be observed. The maximum valid cross section for connection is 2.5 mm² in the case of motor type 1 and 2 (MDA-.10.- MDA-.20.-) and 4 mm² in the case of motor type 3 (MD.-3.-)
 - Connection to motor terminals: connect only 1 external wire.
 - Protective wires and external earth wires (potential equalisation) must be connected. The cross-section of the intended PE clamps is 1.5 to 4 mm².
 - The following clamping torques must be adhered for the screw fittings when assembling motors and fans: junction plates: 4 Nm terminal PTC-Resistor Bartec: 0,4 Nm
 - Terminal box: M4 = 3 Nm; M5 = 3,5 Nm; M6 = 4,5 Nm
 - Fan blades assembly: (screws A2, property class 80) M5 = 6 Nm; M6 = 8 Nm; M8 = 22 Nm
 - Grid and fan fittings (screws A2, property class 80) M5 = 6 Nm; M6 = 8 Nm; M8 = 22 Nm; M10 = 43 Nm; M12 = 75 Nm
 - All openings on the terminal box must be sealed with specially certified cable and lead parts as well as sealing plugs in accordance with Guideline 94/9/EG.
 Cable gland and bush is M20x1.5 EX e, temperature range -40°C/+70°C
 Protection class IP66, for fixed cabling, small degree of danger.
 Clamping range: round cable, diameter 8 to 13mm Torques: screw-in threads in housings: 3.75 Nm Pressure bolt/screw in the case of min. cable diameter: 3 Nm Pressure bolt/screw in the case of max. cable diameter: 2.5 Nm

Operating conditions

- The motors can be operated solely with the rated current stipulated on the nameplate. A deviation between the rated current and the rated value of up to 5% is permissible according to Part A of EN 60034-1.
 - The use of a suitable motor protection switch is compulsory. Please pay attention to the standard EN 60079-14 and the information on the nameplate of the motor. The electric thermal delay monitoring device must be approved in accordance with Directive RL 94/9/EG and has to carry at least classification  II (2) G or  II (2) D.
 - If the fan motor unit is connected to an external hot or cold source, you have to make sure that the temperature is within the permitted ambient temperature.
- **The use of a frequency inverter is not permissible.**

Operation

- Do not operate before checking the following:
 - Connection data corresponds to data on the nameplate.
 - Assembly and electrical installation carried out professionally by qualified personnel.
 - Safety equipment mounted (contact protection).
 - All leftover installation materials and other foreign bodies have been removed.
 - **Rotating parts, e.g. impeller, have no contact with stationary parts.**
 - Protective wires and external earth wire in place.
 - Motor protection switches are fitted professionally and are operational.
 - Check that cabling has been carried out professionally.

- Commissioning:
 - Switch on motor depending on current situation and environment.
 - Check direction of rotation (see diagram in terminal box).
 - Check that motor is running smoothly.

 - self resonance
increased vibrations can occur, (dependent from the fan-speed)
The axial fans are used in air-technical devices and plants.
The self resonance depend from the complete device. The examination of self resonance has to be realized by system manufacturer or plant engineer.

Maintenance, service

- Due to the use of bearings with “lifetime lubrication”, the fan motor is maintenance-free. After finish of fat-application (30000 hrs) a change of the bearings is required.

Please observe the following when carrying out service and maintenance work:

- Rotors or built-in components should be at a standstill!
- Electricity must be switched off and secured against restart!
- Safety at work regulations must be observed!

- Regular cleaning ensures balanced operation for longer.
 - Do not clean with high-pressure cleaner (“steam jet”)!



- Check for abnormal operating noise!

- Change damaged bearings at factory only (special tools needed!).

- Damaged windings must be repaired by authorized workshops holding accreditation or by the producer himself.

- In the event of any other damage, please contact our Service Department.

Instructions for use with PTC resistors

As an alternative to using electric motor protection devices or motor trip switches (thermal delay overload relays), Süd-Electric motors can be equipped with triple PTC resistors in accordance with DIN 44082-M. An alternative protection using PTC resistors instead of electric motor-surveillance-systems is only admissible when this is determined in the EC Type Examination data sheet. It is sensible to record the temperature with PTC resistors in the case of fans that are used at their maximum performance capacity and with temperatures under 10°C. Air density is higher in cold air, therefore the motor current can be higher than the rated current. PTC resistors and PTC-relay protect the motor and guarantee the required operating safety. The PTC-relay is to be certified according to Guideline 94/9/EG, must carry the corresponding markings  II (2) G or  II (2) D] and separate the motor from the power supply and secure against restart. The PTC-relay is not included in delivery.

When Süd-Electric motors are used in combination with PTC resistors, the following points must be observed:

- The maximum test voltage of the PTC resistors is 2.5 V.
- It is not permissible to connect more than two PTC resistors in series as this can lead to undefined tripping.

Planners, manufacturers and operators are responsible for the correct and safe assembly and operation of the motor and its components!

Warranty

See “technical explanations”
28. Warranty

Manufacturer

Our products are manufactured in accordance with the respective international standards and regulations.

If you have questions about using our products or are planning a special application, please contact:

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