INNOMOTICS

Readme | Edition 01/2026

Innomotics Moves!

MD drive systems

1UZ shaft height 71, 90, 132
Permanent magnet motor series with mounted converter IE5

innomotics.com/low-voltage-motors

1 Introduction

Technical queries or additional information

If you have any technical questions or require additional information, please contact → Technical Support *(https://www.innomotics.com/service)*.

Please have the following data ready:

- Type
- Serial number

You can find this data on the rating plate.

Contact person

If you wish to request on-site service or order spare parts, please contact your local contact person. They will establish the contact to the responsible service center. You can find your contact partner in the relevant → contact database *(https://www.innomotics.com/hub/en/contact/map)*.

You can find the associated operating instructions in the → Download Center *(http://www.innomotics.com/downloadcenter/manual/lvm)*.

Product Configurator

The Product Configurator supports you when configuring the optimum drive technology products for a number of applications – starting with gearboxes, motors, converters as well as the associated options and components all the way through to controls, software licenses and connection systems.

The Product Configurator can be used on the internet without requiring any installation. The Product Configurator can be found at the following address: → Product Configurator *(https://www.configurator.innomotics.com/)*

2 Safety instructions

Qualified personnel

Ensure that only qualified personnel work at the machine or close to the machine.

5 safety rules

To ensure your own personal safety as well as to avoid material damage, always comply with the safety-relevant instructions when carrying out any work. Also carefully comply with the 5 safety rules according to EN 50110-1 "Working in a no-voltage state" in the specified sequence.

1. Disconnect the system.
   Also disconnect the auxiliary circuits, for example, anti-condensation heating.
2. Secure against reconnection.
3. Verify absence of operating voltage.
4. Ground and short-circuit.
5. Provide protection against adjacent live parts.

To energize the system, apply the measures in reverse order.

Danger of electric shock and electrical discharge

There are hazardous voltages in the drive controller. Touching or coming close can result in death, serious injury or material damage. Only a qualified electrician is allowed to open the device and work on it.
The "5 safety rules [→ Page 3]" must be observed.

- Ground the drive controller together with the motor in accordance with the applicable regulations
- Ground the device according to DIN EN 61140; VDE 0140, NEC and other relevant standards.
- If no spring elements are used when mounting the adapter plate, an additional connection must be established between the motor and the drive controller in order to establish a correct protective conductor connection.
- Insulate unused open cable ends in the motor terminal box.

- Use suitable miniature circuit breakers with the specified rated current between the line supply and the drive controller.
- Replace defective parts or components with original parts.
- Wait two minutes after switching off (capacitor discharge time)

The following terminals can be as dangerous voltage levels even when the motor is at a standstill:

- Line connection terminals X1: L1, L2, L3
- Motor connection terminals X2: U, V, W
- Connecting terminals X6, X7: Relay contacts, relays 1 and 2

Risk of injury due to rotating parts

Rotating parts are dangerous. Touch protection against rotating parts is no longer guaranteed if covers are removed. Touching rotating parts can cause sparking with subsequent ignition of an explosive atmosphere resulting in death, serious injury or material damage.

- Carefully ensure that all of the covers are closed while operational.
- First switch off and disconnect the machine if you must remove covers. Carefully comply with the "5 safety rules [→ Page 3]".
- Only remove the covers when the rotating parts have come to a complete standstill.

Danger when restarting motors and rotating mechanical parts

Certain parameter settings and changing parameter settings while operational can cause the drive controller to restart automatically after a supply voltage failure, or to result in undesirable changes in operating behavior.
Touching or approaching can result in death, serious injury or material damage.

- Ensured that all rotating parts have come to a complete stop.

Danger as a result of stationary parts under voltage (live parts)

Live parts represent a hazard. Touch protection against active (live) parts is no longer guaranteed if covers are removed. The minimum air and creepage distances may be fallen below (violated) when coming close to active parts. Touching or coming close can result in death, serious injury or material damage.

- Carefully ensure that all of the covers are closed while operational.
- First switch off and disconnect the machine if you must remove covers. Carefully comply with the "5 safety rules" [→ Page 3].
- In operation, the terminal box must always be kept closed. It is only permissible to open the terminal box when the motor is stationary and in a no voltage condition.

Risk of burn injuries as a result of hot surfaces

Individual machine parts can become hot in operation. Burns can result when coming into contact with these parts.

- Never touch machine parts during operation.
- Allow the machine to cool down before starting work.
- Check the temperature of parts before touching them. If required, wear suitable protective equipment.

Risk of death as a result of permanent magnet fields

The permanent magnets of rotors generate strong magnetic fields and forces of attraction. The motor permanent magnets represents a danger for people with active medical implants, who come close to the motors. Examples of such implants include: Heart pacemakers, metal implants, insulin pumps. Further, people that have magnetic or electrically conductive implants are at risk.

- If you are personally affected, always stay a minimum distance of 300 mm from a motor (tripping threshold for static magnetic fields of 0.5 mT according to Directive 2013/35/EU).
- Only the Service Center should remove the rotor.

Data loss due to strong magnetic fields

If you are close to the rotor, any magnetic or electronic data storage media as well as electronic devices that you might be carrying could be damaged.

- Do not wear or carry any magnetic or electronic data storage media (e.g. credit cards, USB flash drives, floppy disks) and no electronic devices (e.g. watches) if you are close to a rotor!

Strong magnetic field when the machine is open

A strong magnetic field is always present inside the machine. If the housing is open, e.g. when maintenance openings are open or when working inside the machine, magnetic objects can be suddenly attracted by this magnetic field. This can result in death, serious injury or material damage.

- Working in the vicinity of the rotor is only permitted in exceptional circumstances. Unambiguous access rules must be established in accordance with the magnetic fields prevailing in the workplace. Clearly mark the boundaries of the areas where standing is permitted.
- People who need to use electronic or magnetic medical aids such as pacemakers, hearing aids, implants or similar devices are at particularly high risk. Such persons must undergo an industrial medicine assessment.
- Observe the following measures.

Personal protective measures

- Ensure that you never wear or carry any of the following objects and that they are kept a safe distance from the machine:
  - All kinds of magnetic metal parts such as, keys, glasses, tools, knives, scissors, tape measures or similar
  - Magnetic jewelry such as rings, chains, needles, watches, etc.
  - Electronic devices and data carriers such as service cards, check cards, credit cards, calculators, cell phones, etc.
  - Wallets or other iron-containing objects
  - Electrically conductive foreign bodies
- Do not use any magnetic tools or lifting devices.
- Wear only occupational safety items without magnetic metal parts, e.g. occupational safety shoes with non-magnetic protective caps and soles.
- Keep your shoes and clothing free from chips and waste containing iron.
- Exercise caution when installing accessories. Ensure that no parts fall into the inside of the machine.
- Do not perform any cutting at the machine, e.g. manufacturing threaded holes. Any exceptions require written approval from the manufacturing company.

Risk of explosion when incorrectly used

This machine is not designed for use in hazardous areas. An explosion can occur if the machine is operated in these areas. This can result in death, serious injury or material damage.

– **Never** operate this machine in hazardous areas.

Hazard when used in functional safety applications

This product is not designed and certified for use in functional safety systems or in safety-related control systems.

If it is operated in these areas, then this can result in death, serious injury and material damage.

– Do **not** operate this motor in applications involving functional safety.

Hazardous substances

Chemical substances required for the setup, operation and maintenance of machines can present a health risk. Poisoning, skin damage, cauterization of the respiratory tract, and other health damage may result.

– Carefully comply with the information in these operating instructions and the product information supplied by the manufacturer.
– Observe the relevant safety regulations and wear the personal protective equipment specified.

Substances that can be easily ignited and are flammable

Chemical substances required for the setup, operation and maintenance of machines may be flammable. Burns and other damage to health and material may result.

– Carefully comply with the information in these operating instructions and the product information supplied by the manufacturer.
– Observe the relevant safety regulations and wear the personal protective equipment specified.

Faults in operation

Any changes with respect to the normal condition can indicate that the machine is not functioning correctly.

- Higher power consumption, temperatures or vibration levels.
- Unusual noise or smells.
- Monitoring devices respond.

These changes can cause faults which can result in eventual or immediate death, serious injury or material damage.

- Immediately inform the service personnel.
- If you are in doubt, immediately switch off the machine, carefully observing the system-specific safety conditions.

3 Preparing for use, transport and storage

Risk of dropping and swinging when transported suspended

If you transport the motor suspended from cables or ropes, the cables or ropes can break, e.g. as a result of damage. Further, if not adequately attached, the motor can swing. This can result in death, serious injury or material damage.

- Use additional, suitable lifting equipment for transport and during installation.
- Two cables alone must be able to carry the complete load.
- Prevent the lifting equipment from sliding by appropriately securing it.
- When using two-cable lifting equipment, ensure that the maximum angle of inclination is ≤45° according to ISO 3266 (DIN 580).
- Align the eyebolts so that the cables used for lifting are aligned with the planes of the eyebolts.

Toppling over or motor slippage

The motor can slide or topple over if it is not correctly lifted or transported. This can result in death, serious injury or material damage.

- Use all the lifting eyes on the machine.
- When using the lifting eyes on the machine, do not attach any additional loads or weight. The lifting eyes are only designed for the weight of the machine itself.
- Any eyes that are screwed in must be tightly fastened.
- Eyebolts must be screwed in right up to their supporting surface.
- Comply with the permissible eyebolt loads.
- When necessary, use suitably dimensioned lifting equipment, for example hoisting straps (EN1492-1) and load restraints (EN12195-2).

Requirements for safe lifting and transporting

If you do not transport or lift the machine in a position appropriate for its construction, the machine can tip, slip into the lifting equipment or fall down. This can result in death, serious injury or material damage.

- Use only the load carrying device on the stator frame for lifting.
- Use the load carrying device appropriate for the machine position.
- Only use suitable rope guiding or spreading devices.

Center of gravity not centered

If the center of gravity of a load is not located centrally between the attachment points, the machine can tip over or slip out of the lifting equipment and fall when it is being transported or lifted. This can result in death, serious injury or material damage.

- Comply with the handling instructions on the machine when transporting it.
- Be aware of the possibility of different loads on the sling ropes or lifting straps and the carrying capacity of the lifting equipment.
- Always take account of the center of gravity when transporting or lifting the machine. When lifting, if the center of gravity is not centered between the attachment points (e.g. due to attachments or mounting material), then position the lifting hook as far as possible above the determined center of gravity.

4 Installation

4.1 Safety instructions for installation

Injury and material damage caused by inappropriate fixing accessories

If screws of an incorrect property class have been selected or if they have been fastened to an incorrect tightening torque, they may break or become loose. This will cause the machine to move, which could damage the bearings. The rotor could smash into the machine enclosure and machine parts could be flung out of place. This can result in death, serious injury or material damage.

- Comply with the required property classes for screwed connections.
- Tighten the screwed connections to the specified tightening torques.

Injury and material damage caused by incorrect machine alignment

If the machine has not been properly aligned, this will mean the mounted parts are subjected to stress/distortion. Screws may become loose or break, the machine will move, machine parts could be flung out of place. This can result in death, serious injury or material damage.

- Carefully align the machine to the driven machine.

Material damage caused by improper handling

Mounting parts such as temperature sensors or speed encoders are attached to the machine and could be ripped off or destroyed as a result of improper handling. This could lead to machine malfunctions, extending even to total loss of the machine.

- Use suitable steps when carrying out installation work on the machine.
- Do not stand on cables or attachments during installation. Do not use attachments as steps.

Danger due to induced voltages

Electrical voltages are induced in the stator when rotating the rotor. Touching the stator connections can result in death or severe injury.

- Do not touch the cable ports.
- Connect the cable connections of the machine correctly and insulate them correctly.

5 Electrical connection

Material damage as a result of connection parts coming loose

If you use fixing elements made from the wrong material or apply the wrong tightening torque, this could impair current transfer or cause connecting parts to become loose. This could result in material damage to the machine or even in total failure, which could in turn lead indirectly to material damage to the system.

- Tighten the screwed connections to the specified tightening torques.
- Observe any specifications regarding the materials from which fixing elements must be made.
- Always carefully check the fastenings when carrying out service work.

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