ENGINEERING TOMORROW

Safety Guide

Advanced Active Filter AAF 007

Installation Safety

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Contents

1 Installation Safety Instructions

1.1 Overview

This safety guide is to be used only to install the drive. When programming or operating the drive, refer to the *Advanced Active Filter AAF 007 Operating Guide* for applicable safety instructions. To install this product safely:

- Check that the content of the delivery is correct and complete.
- Never install or start up damaged units. File a complaint immediately to the shipping company if you receive a damaged unit.
- Follow the instructions provided in this safety guide and the accompanying installation guide.
- Make sure that all personnel working on or with the drive have read and understood this guide and any additional product guides. Contact Danfoss if you are unclear of the given information, or if you are missing information.

1.2 Target Group and Necessary Qualifications

Correct and reliable transport, storage, installation, operation, and maintenance are required for the trouble-free and safe operation of the drive. Only skilled personnel are allowed to perform all related activities for these tasks. Skilled personnel are defined as properly qualified personnel, who are familiar with and authorized to install, commission, and maintain equipment, systems, and circuits in accordance with pertinent laws and regulations. Also, the skilled personnel must be familiar with the instructions and safety measures described in this guide and the other product-specific guides. Non-qualified electricians are not allowed to perform any electrical installation or troubleshooting activities.

Only Danfoss authorized, qualified personnel are allowed to repair this equipment. Specialized training is required to perform the activities related to repair.

1.3 Safety Symbols

⚠ DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates information considered important, but not hazard-related (for example, telegrams relating to property damage).

1.4 General Safety Precautions

⚠ WARNING

LACK OF SAFETY AWARENESS

This guide provides important information on avoiding injury and damage to the equipment or the system. Ignoring this information can lead to death, serious injury, or severe damage to the equipment.

- Make sure to fully understand the dangers and safety measures present in the application.
- Before performing any electrical work on the drive, lock out and tag out all power sources to the drive.

⚠ WARNING

HAZARDOUS VOLTAGE

Filters contain hazardous voltage when connected to the AC mains. Failure to perform installation, start-up, and maintenance by skilled personnel can result in death or serious injury.

- Only qualified personnel must perform installation, start-up, and maintenance.

⚠ WARNING

DISCHARGE TIME

The filter modules contain DC-link capacitors, which can remain charged even when the filter is not powered. High voltage can be present even when the warning indicator lights are off. Failure to wait the specified time after power has been removed before performing service or repair work can result in death or serious injury.

- Disconnect all power sources, including permanent magnet type motors.
- Wait for the capacitors to discharge fully. The discharge time is shown on the exterior of the drive.
- Measure the voltage level to verify full discharge.

⚠ CAUTION

INTERNAL FAILURE HAZARD

An internal failure in the drive can result in serious injury when the drive is not properly closed.

- Ensure that all safety covers are in place and securely fastened before applying power.

⚠ WARNING

AUTOMATIC START

When the filter is connected to the AC mains, it will automatically start operation, causing the risk of death, serious injury, and equipment or property damage.

- A jumper on the EPO contact prevents automatic start-up. Check the presence of the jumper when receiving the filter.
- Ensure that all covers are mounted before applying mains to the filter.
- Ensure that current transducers are mounted correctly to avoid incorrect operation.
- Disable automatic connection via PC software, if automatic start-up should be avoided.
- Disconnect the filter from mains whenever safety considerations make it necessary to avoid unintended start of the unit.

1.5 Lifting the Filter

⚠ CAUTION

LIFTING HEAVY LOAD

The weight of the filter is heavy and failure to follow local safety regulations for lifting heavy weights could cause personal injury or property damage.

- Check the weight of the filter. The weight is provided on the product label.
- If needed, ensure that the lifting equipment is in proper working condition and can safely lift the weight of the filter.

1.6 Electrical Installation Precautions

Before doing electrical work on the drive, lock out and tag out all power sources to the filter.

⚠ WARNING

ELECTRICAL SHOCK AND FIRE HAZARD

The filter can cause a DC current in the PE conductor. Failure to use a Type B residual current-operated protective device (RCD) can lead to the RCD not providing the intended protection and therefore may result in death, fire, or other serious hazard.

- When an RCD is used for protection against electrical shock or fire, use only a Type B device on the supply side.

⚠ WARNING

ELECTRICAL SHOCK HAZARD - HIGH LEAKAGE CURRENT

Leakage currents exceed 3.5 mA. Failure to connect the filter module properly to protective earth can result in death or serious injury.

- Use a reinforced protective earthing (PE) conductor according to IEC 60364-5-54 cl. 543.7 or local safety regulations for equipment with leakage current >3.5 mA.
- Ensure that the PE conductor is enclosed within an enclosure or otherwise protected throughout its length against mechanical damage.
- Select the PE conductor cross section according to IEC 60364-5-54. Minimum recommendations for PE conductor cross-section can be found in the installation guide.

⚠ WARNING

LEAKAGE CURRENT HAZARD

Leakage currents exceed 3.5 mA. Failure to ground the filter properly can result in death or serious injury.

- Ensure that the minimum size of the ground conductor complies with the local safety regulations for high touch current equipment.
- Find recommendations for the PE conductor cross-section in the *Advanced Active Filter AAF 007 Installation Guide*.

⚠ CAUTION

EXCESSIVE HEAT AND PROPERTY DAMAGE

Overcurrent can generate excessive heat within the filter. Failure to provide overcurrent protection can result in risk of fire and property damage.

- Input fusing is required to provide short circuit and overcurrent protection. The installer must provide them. See the *Advanced Active Filter AAF 007 Operating Guide* for fuse specifications.

1.7 Safe Operation

When operating the unit, refer to the *Advanced Active Filter AAF 007 Operating Guide* for guidance and all applicable safety instructions.

- The filter is not suitable as the only safety device in the system. Make sure that extra monitoring and protection devices on drives, motors, and accessories are installed according to the regional safety guidelines and accident prevention regulations.
- Keep all doors, covers, and terminal boxes closed and securely fastened during operation.

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