

Safety Guide

Advanced Active Filter AAF 007

Installation Safety



1 Installation Safety Instructions

1.1 Overview

This safety guide provides applicable safety instructions to be used for safe installation of the filter. When programming or operating the filter, refer to the operating guide. To install this filter 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 the unit is damaged when received.
- Follow the instructions provided in this safety guide and the accompanying installation guide.
- Make sure that all personnel working on or with the filter have read and understood this guide and any additional product manuals. If further clarification or information is needed, contact Danfoss.

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 filter. Only **skilled personnel** are allowed to perform all related activities for these tasks. Skilled personnel are defined as properly trained staff, 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 manual and the other product-specific manuals. Non-skilled electricians are not allowed to perform any electrical installation and troubleshooting activities.

1.3 Safety Symbols

! D A N G E R !

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

! W A R N I N G !

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

! C A U T I O N !

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

N O T I C E

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

1.4 General Safety Precautions

! W A R N I N G !

LACK OF SAFETY AWARENESS

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

- Only skilled personnel must perform installation, start-up, and maintenance.
- Make sure to fully understand the dangers and safety measures present in the application.
- Before performing any electrical work on the filter, lock out and tag out all power sources to the filter.
- Disconnect all power sources. Measure the power source level to verify they are de-energized. Ensure that the filter cannot re-energize.
- Wait for capacitors to discharge fully. The discharge time is shown on the exterior of the filter. Measure the voltage level to verify full discharge.

⚠ W A R N I N G ⚠

ELECTROMAGNETIC INTERFERENCE

AC drives and filters may produce electromagnetic interference up to 300 GHz that may affect the functionality of pacemakers and other implanted medical devices.

⚠ W A R N I N G ⚠

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.

⚠ W A R N I N G ⚠

DISCHARGE TIME

The filter contains 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 capacitors to discharge fully. The discharge time is shown on the exterior of the filter.
- Measure the voltage level to verify full discharge.

⚠ C A U T I O N ⚠

INTERNAL FAILURE HAZARD

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

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

N O T I C E

AUTOMATIC START

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

- 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 connect via PC SW, if automatic start-up should be prevented.
- Disconnect the filter from mains, whenever safety considerations make it necessary to avoid unintended start of the unit.

1.5 Lifting the Filter

N O T I C E

LIFTING HEAVY LOAD

The weight of the filter is heavy and failure to follow local safety regulations for lifting heavy weights may 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 filter, lock out and tag out all power sources to the filter.

⚠ W A R N I N G ⚠**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) may lead to the RCD not providing the intended protection. This 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.

⚠ W A R N I N G ⚠**ELECTRICAL SHOCK HAZARD - HIGH LEAKAGE CURRENT**

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

- Ensure 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.
- PE conductor with a cross-section of at least 10 mm² Cu or 16 mm² Al, or an additional PE conductor of the same cross-sectional area as the original PE conductor as specified by IEC 60364-5-54, with a minimum cross-sectional area of 2.5 mm² (mechanically protected) or 4 mm² (not mechanically protected).
- PE conductor completely enclosed within an enclosure or otherwise protected throughout its length against mechanical damage.
- PE conductor that is part of a multi-conductor power cable with a minimum PE conductor cross-section of 2.5 mm² (permanently connected or plugged in by an industrial connector). The multi-conductor power cable must be installed with an appropriate strain relief.

⚠ W A R N I N G ⚠**LEAKAGE CURRENT HAZARD**

Failure to connect the filter properly to protective earth (PE) can result in death or serious injury.

- Ensure that the minimum size of the PE conductor complies with the local safety regulations for high touch current equipment.

N O T I C E**OVERCURRENT PROTECTION**

The filter is short circuit protected by the internal fuses.

- Overcurrent protection must be provided according to local regulations.

1.7 Safe Operation

When operating the unit, refer to the 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 additional 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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