

## **COMMERCIAL TYPE AIR COOLED CONDENSERS**

### **INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS**

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**Contact:**  
**Address** : Organize Deri Sanayi Bölgesi  
18. Yol 34957 Tuzla İSTANBUL, TURKEY  
**Telephone** : (0216) 394 12 82  
**Fax** : (0216) 394 12 87  
**E-mail** : [info@friterm.com](mailto:info@friterm.com)  
**Web** : [www.friterm.com](http://www.friterm.com)

This document **specifies the instructions** for installation, operation and maintenance of **Commercial Typt Air Cooled Condensers (HS, MHS, EHS, DK and their L models)** produced by FRITERM A.Ş., Turkey.

## 1. GENERAL

The instructions below should be observed for health and safety reasons, during installation, usage and maintenance of the product.

When the product is received, it should be inspected visually and supplier should be informed within 7 days incase of any damage or **missing**.

## 2. HANDLING AND STORAGE

**Check carefully if there is any damage on package or on product.**

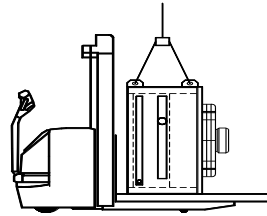
Store the product in its original packing in a dry area protected from the **improper weather conditions** or protect it from dirt and **enviromental effects** until final installation.

Do not keep the product in extreme hot and cold places.

Avoid extremely long storing time (maximum one year is recommended for storing)

If a fan is stationary for long periods in humid atmosphere, it should be runned for minimum of two hours per month to remove any damp that may have condensed within the motor.

A forklift or crane should be used to carry heavy products. **Work gloves** should be used if light products are handled without any lifting vehicle.



**Figure 1. Handling scheme during carriage**

## 3. INSTALLATION

System **installer** is responsible for the accordance of adequate installation and safety informations with valid standards and instructions. (DIN EN 292/294)

Builder or operator should observe EMC 89/336 EEC instructions.

Before installation, it should be ensured that product's technical specifications are in accordance with desired working conditions.

### 3.1. Location

Product is designed to work only for fixed location. It should be installed to stable base.

Ventilation of working place should be sufficient and there should not be any hazardous substances and explosives nearby

Air motion should not be adversely affected by obstructions and the inlet air should not be undesirably heated or cooled by other devices.

### 3.2. Installation

Installation and electrical connections must only be carried out by qualified personnel.

Care should be taken while unpacking and installing of the products in order not to cause any damage to the tubes and piping connections.

Be sure that product is not connected to the power supply during installation

The installation position of product should be in accordance with its design.

Connections used in installation should be adequate to support the total operational forces.

Installation should not carry external vibrations to the product. If necessary, a vibration eliminator should be added to the system.

Electrical connection diagrams of fans are given below.

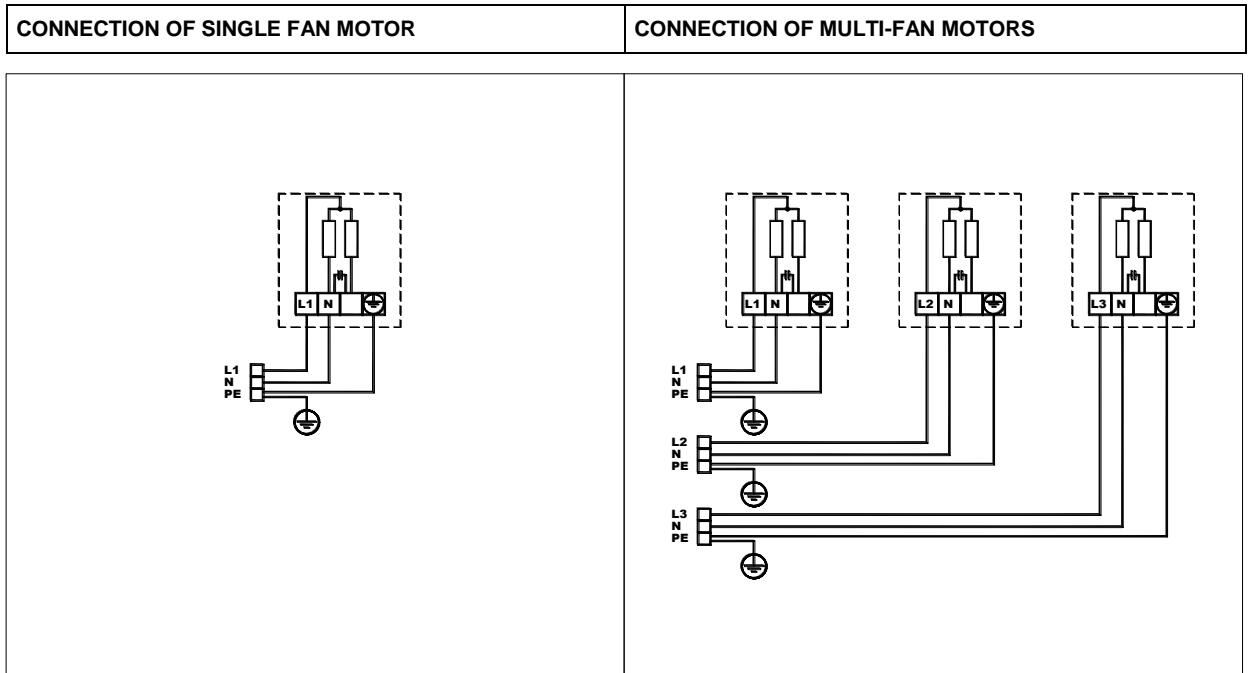


Figure 2. Ø300 mm, Ø350 mm, Ø400 mm and Ø450 mm single phase fans

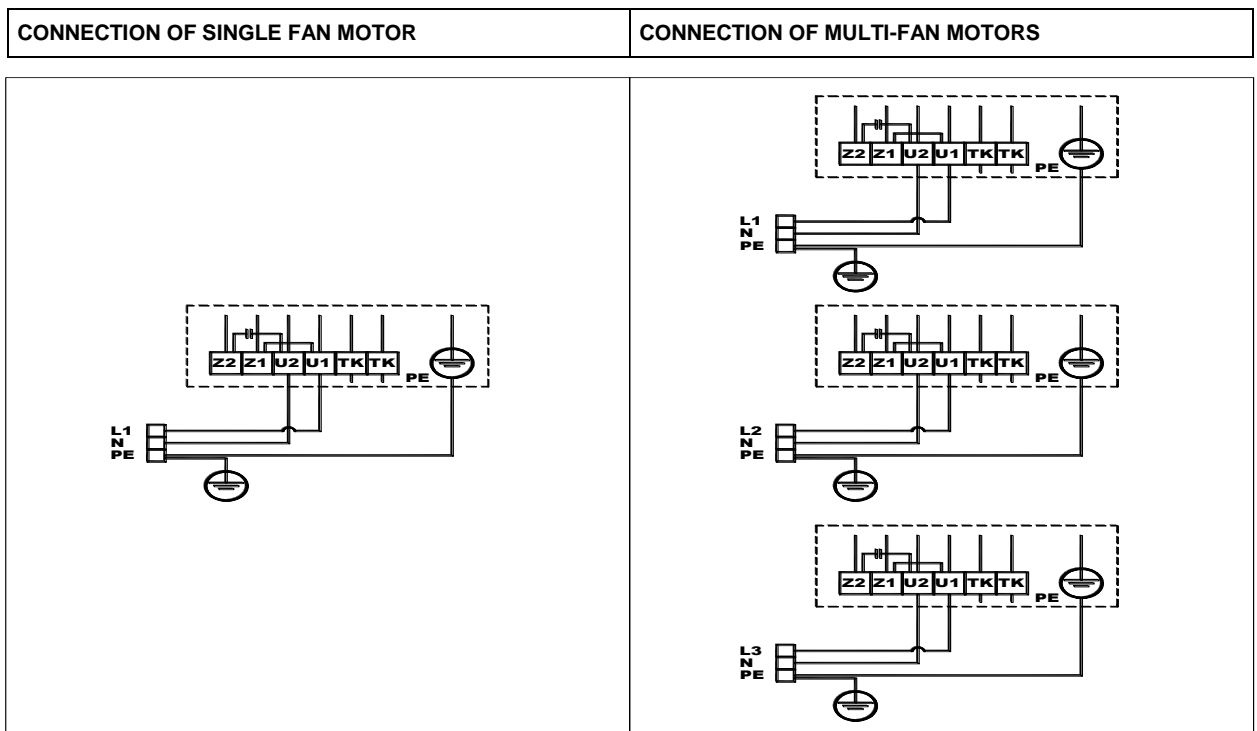


Figure 2. Ø500 mm single phase fans

Connection diagrams are valid for the fans that are used in standard products by FRITERM. During replacement, if another manufacturer's fan is employed, connection should be done as specified on the fan. Refer to the catalogs for fan diameter and number of fans.

**4. START UP**

Before the initial start of the product, be sure that all the protective grills of the fan, connections of motor, terminal block caps are safe, mechanical and electrical connections are correct, cables are far away from the fans and fans can rotate freely without obstacle.

## 5. OPERATING

If a fan is stationary for long periods in humid atmosphere, it should be runned for minimum of two hours per month to remove any damp that may have condensed within the motor.

It is recommended for fans to start up to 6 times, in extreme cases maximum 10 times per hour.

When fans are running, objects that **may** pass through the fan guards such as as a piece of cloth or long hair, should be kept away from fan.

Stay away from the airways of the fans when fans are running.

The operation should be stopped and the supplier should be consulted in case of any unusual working condition, like an unusual operating noise, is realized.

Before touching, it is recommended to ensure that the headers and the connection pipes are **neither too hot nor cold** due to working conditions of the fluid side.

Intensive vibrations, due to uneven running of fans, may lead to outage.

Do not maintain and service the product during operation.

## 6. MAINTENANCE AND SERVICE

Maintenance and service must only be carried out by qualified personnel.

Please **follow** safety regulations and employee's protection rules during maintenance and service. (DIN EN 50110)

Fluid circulation should be stopped and **it must be ensured that there is no power supply connection during maintenance and service.** Wait till until system's tempeprature reaches the ambient temperatur if possible.

If pipes in the product or connection pipes, need to be repaired, the fluid in system must be discharged.

Under normal operating conditions, fans do not require 'bearing maintenance' for 30.000-40.000 hours.

Lubrication is unnecessary unless this time is exceeded or bearings are damaged.

Bearings should be replaced with original parts. During the maintenance and service of the fans, instructions prepared by fan the supplier should be followed. If necessary, apply to the manufacturer.

Be sure that there is not any left tool or unfamiliar object in or near the product during maintenance and service.

After maintenance and service, before running the system, control the Initial Starting instructions.

### 6.1. Periodic Controls (once a year)

Fin and pipes should be controlled whether there is a corrosion or not. There can be leakage if pipes are worn out.

Pipeline should be controlled for damage or leakage.

Mechanical and electrical connections of the fans should be controlled. Fans should rotate freely. Fan guard should be stable.

All connections, especially installations of fan motor and product must be ensured to be secure.

### 6.2. When necessary

The surface of the heat exchangers should be inspected for dirt and dust and if necessary it should be cleaned with soft brush, pressurized air or pressurized hot water or similar method.

**Please take precaution not to damage fins and fans.** The chemicals that can be in reaction with the product's material, should not be used. Electrical connections and fan motors should not be wetted during cleaning.

## 7. SOUND PRESSURE LEVEL

FAN DIAMETER	RPM	Sound Power Level	Number of Fans	1	2	3	4	6
Ø 250	1400	54	SOUND PRESSURE LEVEL dB(A) (At distance 10 m)	31	32	-	-	-
Ø 300	1400	59		34	37	39	-	-
Ø 350	1400	64		39	42	-	-	-
Ø 350	900	59		34	37	-	-	-
Ø 400	1430	69		44	47	49	50	-
Ø 400	900	64		39	42	44	45	-
Ø 450	1400	73		47	50	52	53	55
Ø 450	900	67		41	49	46	47	49
Ø 500	1210	73		47	50	52	53	55
Ø 500	900	67		41	49	46	47	49

Sound pressure levels as dBA at a distance of 10 m for different number of standard fans used in FRITERM products (REF: EN13487). Test datas are taken from fan manufacturer's documents. The values given above are only for comparison. **Actual values may depend on structure of the environment and installation characteristics.**

## 7. INVALIDITY OF WARRANTY

The warranty declared in sales contract, is valid unless installation; operation; maintenance instructions, given in this document and its attachment, are violated.



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