A/C Recovery, Recycling and Recharge Machine

EKM PLUS

Operating And Service Manual

CE

ENGLISH

Contents

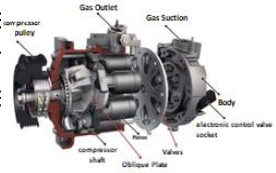
Technical Specifications

Model	EKM PLUS
Refrigerant type	R134a
Power supply	220 V ±10% / 50Hz
Display	4x20 character LCD
Storage tank capacity	6 kg
Scale resolution	±5 gr
Compressor	1/4 HP 8 cc hermetic
Recovery rate	250 gr/min maximum
Operating range	8°C to 49°C
Low pressure gauge	15 bar
High pressure gauge	34 bar
Hose length	180 cm (**optional 250 cm & 300 cm**)
Dimensions	47 cm x 90cm x 57 cm
Weight	62 kg

Safety

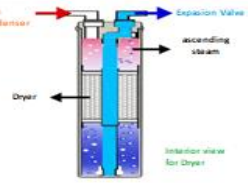
- Read this manual carefully and understand all the procedures outlines in this manual before operating the unit. Failure to follow these procedures could result in personal injury or property damage.
- Allow only qualified personnel to operate this unit. The operator must have basic knowledge of air conditioning and refrigeration systems, including potential hazards associated with the handling of refrigerants and systems under high pressure.
- Always wear safety goggles and appropriate protective clothing. Avoid contact of liquid refrigerant with the eyes and prolonged skin exposure.
- Pressurized tank contains liquid refrigerant.
- Never fill the refrigerant tank to more than 80% of its maximum capacity.
- Hoses may contain refrigerant under pressure.
- Make sure to use a properly grounded AC outlet.
- Do not operate the unit with a damaged cord or plug. Extension cords should not be used unless absolutely necessary.
- Disconnect unit from power supply before removing any protective cover.
- Do not expose the unit to wet environment.
- Only use the correct refrigerants.
- Avoid breathing in refrigerant vapors. Use only in well ventilated areas.
- The unit must be transported in a vertical position.
- The refrigerant scale must be fixed in place before transport.

COMPRESSOR : It increase pressure of refrigerant. Mean while refrigerant temparature increase too

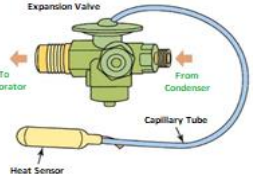


CONDENSER: Role of this unit transition refrigerant to liquid state from gaseous state

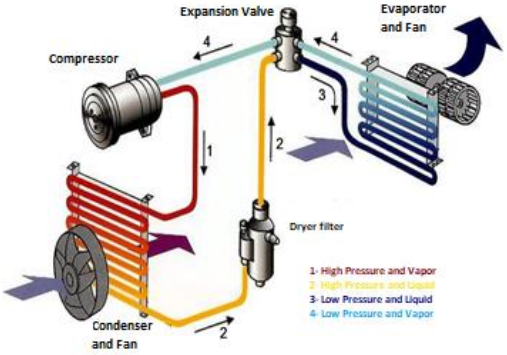
DRYER FILTER: The refrigerant which coming from radiator is dryed by the filter. Allows to pass liquid refrigernt through it and also Works a refrigerant tank in the system.

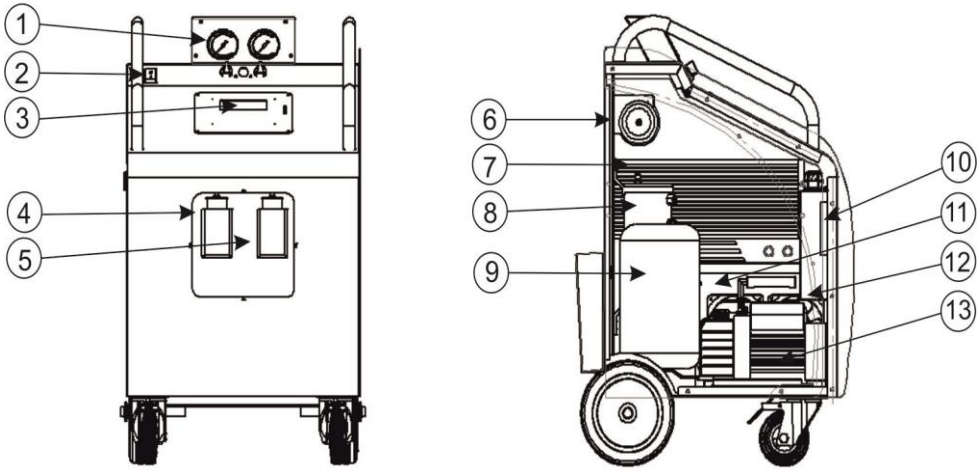


EXPANSION VALVE:
A expansion valve is a component in refrigeration and air conditioning systems that controls the amount of refrigerant released into the evaporator thereby controlling superheat



EVAPORATOR:
An evaporator is a device in a process used to turn the liquid form of a chemical substance such as water into its gaseous-form/vapor. The liquid is evaporated, or vaporized, into a gas form of the targeted substance in that process.





1	Pressure Gaugess	6	Dryer Filter	11	Compressor
2	On/Off button	7	İnverter (optional)	12	Condenser
3	Control Panel	8	Oil Seperator	13	Vacuum Pump
4	New oil bottle	9	Gas tank	14	
5	Used oil bottle	10	Power Switch		

Enter ENTER
next operation / confirm

esc °C kg ESC
previous operation / interrupt

UP
previous selection / increase value

DOWN
next selection/ decrease value

Setup

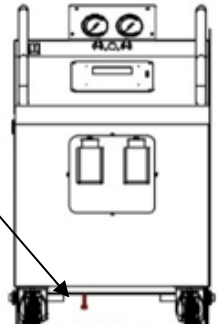
Unpack the unit and accessories. The package contains:

- EKM PLUS unit
- Low-side and high-side services hoses and quick-action coupler valves
- Power cable
- Operating manual and warranty manual

Before the first use:

1. Place the unit on a flat surface.
2. Connect quick-action coupler valves to the service hoses (DO NOT OVERTIGHTEN).
3. Remove aluminum foil from the vacuum pump and install oil filler cap.
4. Remove fixing bolt located under the unit.
5. Plug the power cable into a grounded power outlet.
6. Turn on the power switch.
7. Perform a vacuum calibration (page 25).

WARNING: Scale is calibrated at the factory, re-calibration is not necessary.



1- Recover Refrigerant

The device draws gas from the air conditioning system of the vehicle, separates it from oil and particles, trap the passed acid and moisture through by the filter, purifies it and transfers it to its own tank.

1. Connect service hoses to the vehicle and open adapters.
2. Select REC FROM VEHICLE then press ENTER.
3. device will start recovering refrigerant from the A/C system.
4. If you see the warning OPEN USED OIL VALVE, open used oil valve SLOWLY.
5. If you see the warning CLOSE USED OIL VALVE, close used oil valve then press ENTER.
6. Screen will display PROCESS COMPLETE.

WARNING:

- Some refrigerant will remain in the compressor, hoses or heat exchangers. The amount is dependant on the ambient temperature and last operation performed.

- If you operate the vehicle until the normal operating temperature before operation, the gas in the air conditioning system will heat up and the duration of gas extraction from the car will be shortened. The vehicle A/C must be off.

2- Charge Refrigerant

Uses to charge vehicle A/C system with refrigerant.

1. Connect service hoses to the vehicle
   and open adapters.
2. Select CHARGE REFRIGERANT then press ENTER.
3. There is two choice
   - **A. MANUAL**
   - **B. AUTO DATA**

A. **MANUAL**

Operator must include the (vacuum time, Leak control, amount of gas) manually

1- VACUUM TIME

Vacuum time entered to make the air conditioning system vacuum.

NOTE: The purpose of this process is to remove the air, water vapor and other non-condensable gases from the air conditioning system.

2- LEAK CONTROL

The purpose of this operation is to see if the vacuum level is deteriorating.

1. Screen will display LEAK CONTROL TIME.
2. Use UP & DOWN buttons to set the desired time.
3. To skip leak control operation set the time to zero.
4. Press ENTER to proceed.

WARNING:

- Unit will stop operation and screen will display LEAK IN SYSTEM in case of a leak.
- Vacuum operation is required prior to Leak Control.

3- AMOUNT OF GAS

The purpose of this process is to enter the amount of gas we want to apply to system.

NOTE: in order to get better results we have to add gas (30-40gr.), hose amount to the amount of gas we want to print .

4- Add New Oil

The purpose of this operation is to add new oil to the vehicle A/C system.

WARNING: Vacuum operation is firstly required to Add New Oil.

1. Screen will display ADD NEW OIL.
2. Use UP & DOWN buttons to select YES or NO.
3. Skip oil injection by selecting NO.
4. Press ENTER to proceed.

WARNING: Open oil valve when you see the warning on the screen.

Add the desired amount by watching cursors then

CLOSE OIL INJECTION VALVE. After closing the oil valve, press ENTER to proceed.

B. AUTO DATA

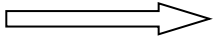
In this option, the gas filling process will be done completely automatically.

NOTE: it is not necessary to add the amount of gas which is the hose share in this process.

Vehicle Database

Select vehicle brand and model to charge vehicle A/C system with refrigerant.

1. Select VEHICLE DATABASE then press ENTER.
2. Use UP & DOWN buttons to select vehicle brand and model then press ENTER.
3. Unit will proceed with Vacuum, Leak Control, Add New Oil and Charge operations.



3- RECOVER FROM NEW TUBE

Add refrigerant to the storage tank.

WARNING:

- Do not fill the own storage tank to its full capacity.
- Turn the external tank upside down to speed up the process.

1. Connect any one of the service hoses to the external tank and open tank's valve.
2. Open the valve of the connected service hose, close the other one on manifold.
3. Use UP & DOWN buttons to select REC FROM VEHICLE then press ENTER.
4. Unit will start transferring refrigerant to the own storage tank.
5. Operation will automatically stop when the storage tank is full or the external tank is empty.
6. Stop the operation by closing external tank's valve.
7. screen will display COMPLETED.

Air Purge

Excess air in the storage tank is purged. During recovery, air might be sucked into the storage tank with refrigerant due to leaks in the system. The unit will perform automatic air purge when sensors detect excess air in the storage tank. Operation time might differ depending on the amount of air in the tank.

Usage information

This menu contains the following information:

- Last recovered amount
- Total vacuum time
- Filter usage
- Tank refilled amount
- Total amount recovered
- Total amount charged

Press and hold ESC button on the main menu screen for 5 seconds to enter the calibrations and settings.
To obtain a password, call the manufacturer service.

1- DATE / TIME

To adjust the date and time of machine.

2- DIL – LANGUAGE

Turkish and English languages are registered in it’s own memory. User's request the desired language is loaded onto

3- SYSTEM VACUUMING

It is a process used to vacuum the system

4- SERVICE(ciphered)

Uses to Usage reset, Tank capacity, Filter capacity and oil container setting

1- WEIGHT CALIBRATION

To do this, firstly we need an object that we know the net weight.

A. TARE**:** to reset the weight of machine own tank weight.

B. WEIGHT CALIBRATION**:** when you choose this menu it is automatically measured and the object which you know the weight of it, put it on the tank and press Enter to complete.

NOTE: the own tank must be completely empty.

2- VACUUM CALIBRATION

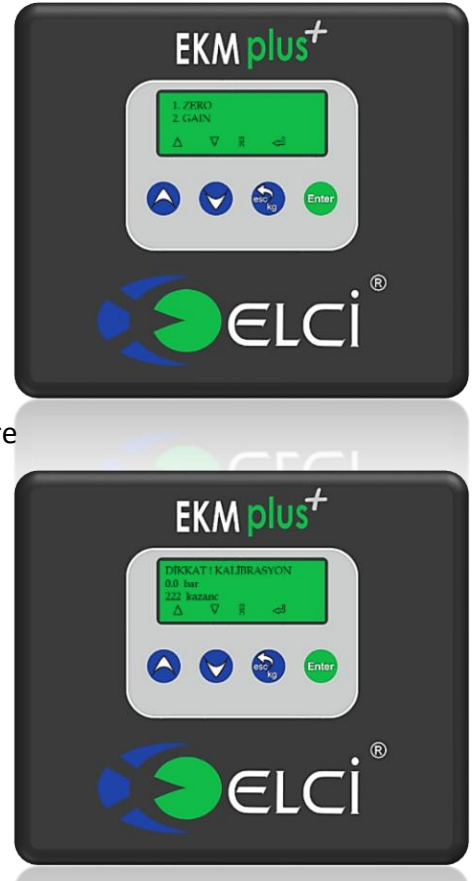
a. Select vacuum calibration option.
b. For calibration open manifold valves and press ENTER.
c. After a beep warning close the manifold valves and press ENTER.
d. Machine automatically starts to countdown a timer and the number beside it also will decrease to a certain number.
e. After finishing the operation screen will display COMPLETED.

3- PRESSURE CALIBRATION

Select pressure calibration option

1. ZERO: By selecting this the pressure of machine is equalized to the atmospheric press.
2. GAIN: to perform this operation

- Combine manifold outlets with a single hose and open manifold valves.
- Charge 100 gr. Refrigerant
- Note the pressure of gauge
- Select the GAIN option.
- By using the arrows, insert the Pressure which you noticedbefore in the bar section.
- To COMPLETE press Enter.

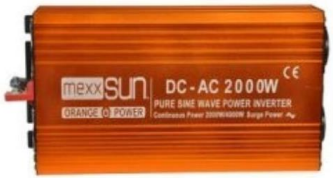


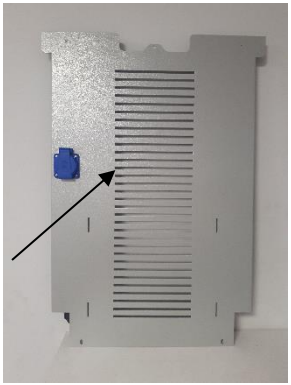
İnverter (optional)

Since our EKM PLUS devices are portable land, mountain, etc. Where the electric power is not available, is used to provide 220 volts of energy required for operation of the device.

Usage:

- Attach the power cable of the device to the socket on the back of the device.
- Attach the RED wire of the inverter to the (+) side of the battery
- Attach the BLACK wire of the inverter to the (-) side of the battery
- start the vehicle engine
- Turn on EKM PLUS





Socket on the back of the device

Compressor Maintenance

Should be performed when screen displays CHANGE COMPRESSOR OIL.

1. Detach the hose from the drier filter to the compressor.
2. Use new oil bottle to fill in approximately 70 gr of oil with the help of TEST menu.
3. Re-attach the hose.
4. Go to main menu.
5. Press ESC for 5 seconds.
6. Select COMPRESSOR MAINTENANCE and press ENTER.
7. Screen will display COMPLETED.

Filter Change

Drier filter keeps recovered refrigerant clean and moisture free. Filter must be replaced periodically in order to ensure the unit is working properly. Using expired filters voids warranty. EKM plus filters need to be replaced every 100 kg of operation. After 80 kgs of operation, the unit will start reminding the user at every start up. When the filter reaches 100 kg, the unit will be locked.

1. Order a new filter.
2. Replace the filter.
3. Turn on the unit.
4. Hold ESC for 5 seconds.
5. Select FILTER CHANGE and press ENTER.
6. Use UP & DOWN buttons to write password then press ENTER.

Vacuum Pump Oil Change

In order to maintain pump efficiency, vacuum pump oil must be changed regularly. Contaminated oil might lead to irreversible damage to mechanical components of the vacuum pump. Change vacuum pump oil under the following conditions:

- Every 30 working hours or when filter drier is replaced
- When the color of the oil becomes dark or cloudy

1. Obtain an empty container to collect the used oil.
2. Disconnect the unit from the electrical supply.
3. Unscrew the oil filler cap.
4. Unscrew the drain plug.
5. Allow the oil to drain out.
6. Close the drain plug.
7. Pour in new vacuum pump oil through the fill hole until mid level.
8. Replace oil filler cap.
9. Turn on the unit.
10. Press ESC for 5 seconds.
11. Select VACUUM OIL CHANGE to erase the warning.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION	PROBLEM	CAUSE	SOLUTION
Unit does not turn on	Power cord not plugged in	Plug in the power cord	Unit does not charge	No refrigerant in tank	Fill tank with refrigerant
	Power switch off	Turn the power switch on		Tank valve closed	Open valve
	Circuit breaker error	Replace circuit breaker		Service hose couplers closed	Open couplers
	No power in AC outlet	Check power source		Service hose constricted	Straighten hose
Unit does not recover	Manifold valve closed	Open valve		Leak in vehicle AC system	Find and repair leak
	Service adapters closed	Open adapters		Scale calibration error	Re-calibrate scale
	Storage tank full	Empty Storage Tank	Unit cannot pull vacuum	Loose hose connection	Tighten hose connections
	Vacuum calibration error	Re-calibrate vacuum		Leak in vehicle AC system	Find and repair leak
Weight inaccuracies	Unit moving	Do not move unit		Oil injection valve open	Close oil injection valve
	Storage tank touching the unit	Prevent contact		Leak in hoses	Find and repair leak
				Contaminated vacuum pump oil	Change vacuum pump oil

WARRANTY TERMS

1. Warranty period is (...) years and commences on the delivery date of the product.

2. The entire product except the hoses and the adapters is warranted by our company.

3. The warranty certificates without the sales date written by the seller/dealer and stamp and signature are invalid.

4. If the product becomes defective within the warranty period, the time elapsed during repair is added to the warranty period. The repair period of the product is maximum 30 (thirty) working days. This period starts as of the date the defect of the product is notified to the service station, or if a service station is not available, to any one of the product's seller, distributor, agency, representative, importer or manufacturer. If defect of the product is not remedied within 15 working days, the manufacturer and importer must allocate another industrial product with similar functions to the use of the consumer until repair of product is completed. National, legal and religious holidays and weekends are not considered as working days.

5. If the product becomes defective within its warranty period due to faults of material and workmanship or assembly, its repair shall be performed without demanding any charges as a cost of workmanship or replaced part, or by any other means.

6. Malfunctions taking place due to the use that is other than the ones stated in the operating manual of the product will not be covered under the scope of the warranty.

7. The warranty will expire automatically whenever one of the following occurs: failure to perform maintenance; **use of non-original spare parts, non recommended oils and/or gases**; use of expired filters; use of unsuitable refrigerants and/or lubricants; damage caused by shocks, fires, or other accidental events.

8. The manufacturer declines any and all responsibility for damage to vehicles on which recovery/recycling and recharging are performed if said damage is the result of unskillful handling by the operator or of failure to observe the basic safety rules set forth in the instruction manual.

9. This warranty does not cover damage arising during transportation. The product for which repair under guarantee is requested must be shipped to the manufacturer under the customer's exclusive responsibility.

10. The manufacturer shall not be responsible for any additional costs associated with a product failure including, but not limited to, loss of work time, loss of refrigerant, cross-contamination of refrigerant, and unauthorized shipping and/or labor charges.

11. For the problems that may arise concerning the certificate of warranty, you may refer to the General Directorate for the Protection of Consumers and Competition of the Ministry of Industry and Trade.
12. Even though the consumer uses its right of repair, if;
    * As of the delivery date of the product to the consumer, within one year, provided that the determined warranty period is valid; the same failure recurs more than twice, or different failures occur more than four times, or total of different failures within the determined warranty period is more than six, and also if these failures prevent benefiting from the product continuously;
    * The required maximum repair period is exceeded;
    * It is determined that the defect cannot be remedied with a report prepared by the service station of the company, and if a service station is not available, by any one of the product's seller, distributor, agency, representative, importer or manufacturer, respectively; the consumer may request the replacement of the product free of charge, or return of the cost or a discount in the cost at the rate of defect.

WARRANTY CERTIFICATE

MANUFACTURING COMPANY	
TITLE	ELCİ ELEKTRONİK KLİMA SANAYİ VE TİCARET LTD. ŞTİ.
ADDRESS	İVEDİK ORGANİZE INDUSRIAL REGION WOOD WORKING SITES 1354. STREET. 1357. Qr. NO: 30 YENİMAHALLE / ANKARA / TÜRKİYE
TELEPHONE	+90 312 395 53 53 (PBX)
FAX	+90 312 395 18 86

PRODUCT	
TYPE	REFRIGERANT RECOVERY RECYCLE RECHARGE MACHINE
BRAND	ELCİ
MODEL	EKM PLUS
SERIAL NUMBER	.....
PLACE AND DATE OF DELIVERY	.....
WARRANTY PERIOD	.....
MAXIMUM REPAIR PERIOD	30 WORKING DAYS

DEALER OR DISTRIBUTOR COMPANY	
TITLE	.....
ADDRESS	.....
TELEPHONE	.....
FAX	.....
INVOICE DATE AND NUMBER	.....

Gases and oils recommended by the manufacturer;

Refrigerant:

- ✓ Tazetti
- ✓ Solkane
- ✓ AG Adge
- ✓ Arkema
- ✓ Honeywell
- ✓ Chemours

Compressor oils:

- ✓ PAO compressor oil
- ✓ Reniso PAG
- ✓ Reniso Triton SEZ 68 POE
- ✓ Reniso Triton SE 170 POE

Vacuum pomp oils:

- ✓ ELCİ vacuum oil
- ✓ Value vacuum pomp oil.

About Us

ELCİ Electronic Air Conditioning Industry Trade Limited Company was founded in 2003 and has become the leader in the production of Air Conditioning Service Stations in a short time.

Since its foundation, **ELCİ** had contributed to continuous development with production according to Turkish Standards and European norms.

We are awarded with ISO 9001:2008 that has the validity all around the world and CE certificate that satisfies all quality and safety requirements necessary for European Union (EU) countries.

Our customer oriented management system and continuous research and development activities enable us to offer the best price to meet the expectations of the customers at highest level, without compromising the quality. From design to after sales in every stage of production, we are contributed to Total Quality Management System.

The first full automatic recharge station in Turkey was developed and produced by **ELCİ** in 2003 with a great success. And in 2013 another milestone in the company's history, is the design and production of the first recharge station operating by a tablet via Bluetooth technology. From the beginning, our experienced team dedicated to follow the technological developments to produce more user friendly products for more environmentally friendly world.

Muniments

TÜRK STANDARDLARI ENSTİTÜSÜ

TSE-HYB

HİZMET YETERLİLİK BELGESİ

Belge No 06-HYB-3247

İlk Veriliş Tarihi 19.04.2012

Son Geçerlilik Tarihi 19.04.2018

Firmanın Adı :ELCİ ELEKTRONİK KLİMA SANAYİ TİCARET LTD. ŞTİ.

Firmanın Adresi İ.O.S.B.AĞAÇ İŞLERİ SAN. 1354 CAD. 1357 SOK. NO:30 YENİMAHALLE-ANKARA/TÜRKİYE

Hizmet Yeri Adresi İVEDİK ORGANİZE SANAYİ BÖLGESİ, AĞAÇ İŞLERİ SANAYİ, 1354 CADDE 1357. SOKAK, NO:30 ANKARA/ TÜRKİYE

Sicil No

Verilen Hizmetin Kapsamı

1. TS 12575 (25.04.2007/T1) SERVİSLER. OTOMOTİV SANAYİ SERVİS HİZMETLERİ CİHAZ VE EKİPMANLAR İÇİN KURALLAR STANDARDINA UYGUN HİZMET VEREN (OTOMOTİV KLİMA GAZ DOLUM VE TEST CİHAZI)
* ELCİ ELEKTRONİK KLİMA SANAYİ TİCARET LTD. ŞTİ. SERVİSİ (ET6886)
(04.02.2015) (ELCİ) MARKAL

SISBEL

CERTIFICATE

ELCİ ELEKTRONİK KLİMA SAN. TİC. LTD. ŞTİ.

İvedik Org. San. 1354. Cad. 1357. Sok. No:30 Yenimahalle-Ankara

Klima gaz doldurma ve boşaltma cihazları, tasarım imalatı ve servisi

- EA 18 -

kapsamında

ISO 9001: 2008 KYS

SERVICE QUALITY DOCUMENT

ISO 9001:2008

T.C.
TÜRK PATENT ENSTİTÜSÜ

MARKA YENİLEME BELGESİ

Marka No : 2004 06901 - Ticaret

Marka Sahibi : ELCİ ELEKTRONİK KLİMA SANAYİ TİCARET LİMİTED ŞİRKETİ
TÜRKİYE CUMHURİYETİ
İVEDİK ORGANİZE SAN. 1354.CAD.1357.SOK. NO:30
OSTİM YENİMAHALLE ANKARA

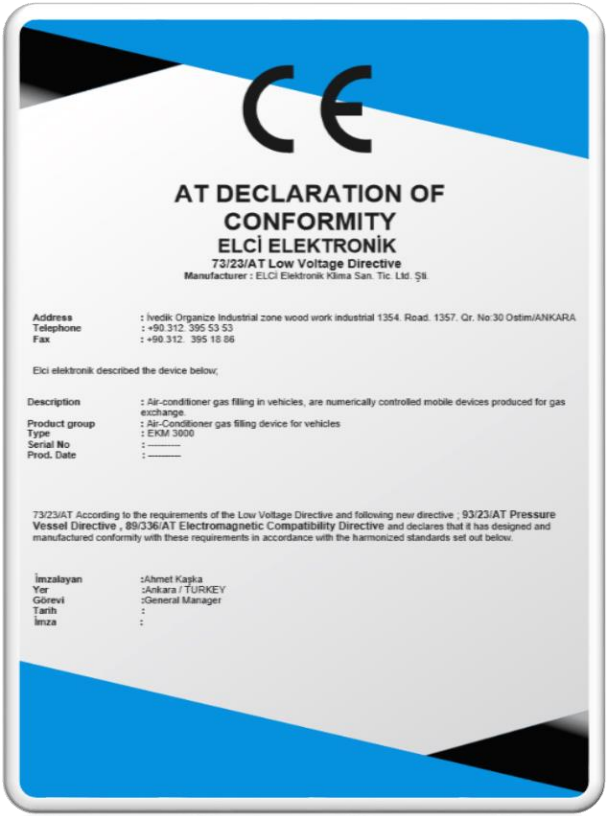
Emtiası : 11
Klimatizasyon ve havalandırma cihazları.

İş bu Marka ilk defa 17/03/2004 tarihinde tescil edilmiş olup, 556 Sayılı Markaların Korunması Hakkında Kanun Hükmünde Kararnamenin 40. Maddesi gereğince 17/03/2014 tarihinden itibaren ON YIL süreyle yenilenmiştir.

F.Ü.B. AKIN
Enstitü Başkanı a.
Markalar Dairesi Başkanı
Hüseyin ÖZDEMİR
Şube Müdürü

TÜRK PATENT [●] ENSTİTÜSÜ

BRAND RENEWAL CERTIFICATE



CE

AT DECLARATION OF CONFORMITY

ELCİ ELEKTRONİK

73/23/AT Low Voltage Directive

Manufacturer : ELCİ Elektronik Klima San. Tic. Ltd. Şti.

Address : İvedik Organize Industrial zone wood work industrial 1354. Road. 1357. Qr. No:30 Ostim/ANKARA
Telephone : +90.312. 395 53 53
Fax : +90.312. 395 18 86

Elci elektronik described the device below;

Description : Air-conditioner gas filling in vehicles, are numerically controlled mobile devices produced for gas exchange.
Product group : Air-Conditioner gas filling device for vehicles
Type : EKM 3000
Serial No : ---------
Prod. Date : ---------

73/23/AT According to the requirements of the Low Voltage Directive and following new directive ; 93/23/AT Pressure Vessel Directive , 89/336/AT Electromagnetic Compatibility Directive and declares that it has designed and manufactured conformity with these requirements in accordance with the harmonized standards set out below.

İmzalayan :Ahmet Kapka
Yer :Ankara / TURKEY
Görevi :General Manager
Tarih :
İmza :

CE DECLARATION OF CONFORMITY

NOTE