

ECO COOLER

WATER COOLED CHILLER

50Hz



Eco Friendly Refrigerants

Screw Compressor



ECO COOLER
AIR CONDITIONER

MULTI STAGE EVAPORATIVE COOLING





Special Public places
Commercial, Office, Hospital, Restaurant
Coffee shop & Etc .

Table of Contents

INTRODUCTION	7
NOMENCLATURE	7
FEATURES AND BENEFITS	8
STANDARD SPECIFICATIONS	10
OPTIONAL FEATURES	19
TECHNICAL DATA	20
PERFORMANCE DATA TABLES	23
UNIT DIMENSIONS	28
Typical electrical wiring diagram	39
TYPICAL WIRING DIAGRAM	40

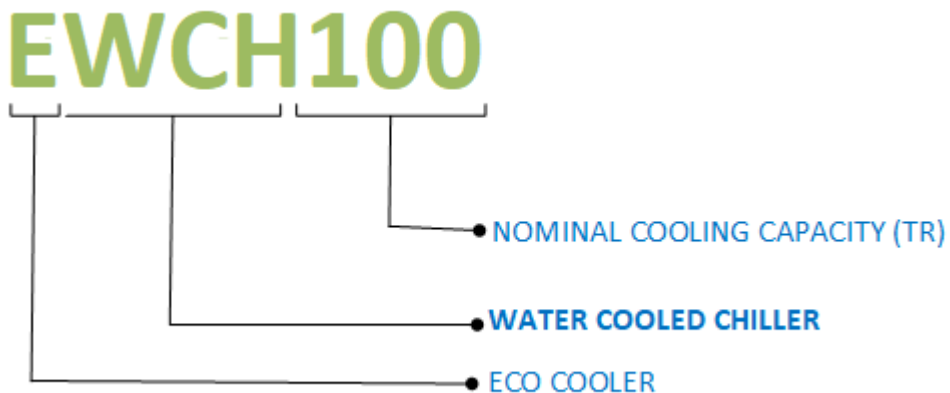
INTRODUCTION

Eco Cooler connection with customers is permanent and does not lead to selling units. Our motto is to make the best environment for people to build a better world to live in.

Eco Cooler Air cooled water chillers EACH series are designed to be suitable for all weather conditions, from cold to moderate to hot climates, the various environments, from residential buildings to industrial sites with polluted environments. Optimum performance, high efficiency, low power consumption, easy installation, and low noise operations are the features of EACH chiller.

EACH series cooling capacities are available from 45 TR (158 kW) to 430 TR (1512 kW). Models are in two categories STANDARD (for cold and moderate climates) and HIGH EFFICIENT (for hot and tropical climates) conditions.

NOMENCLATURE



FEATURES AND BENEFITS

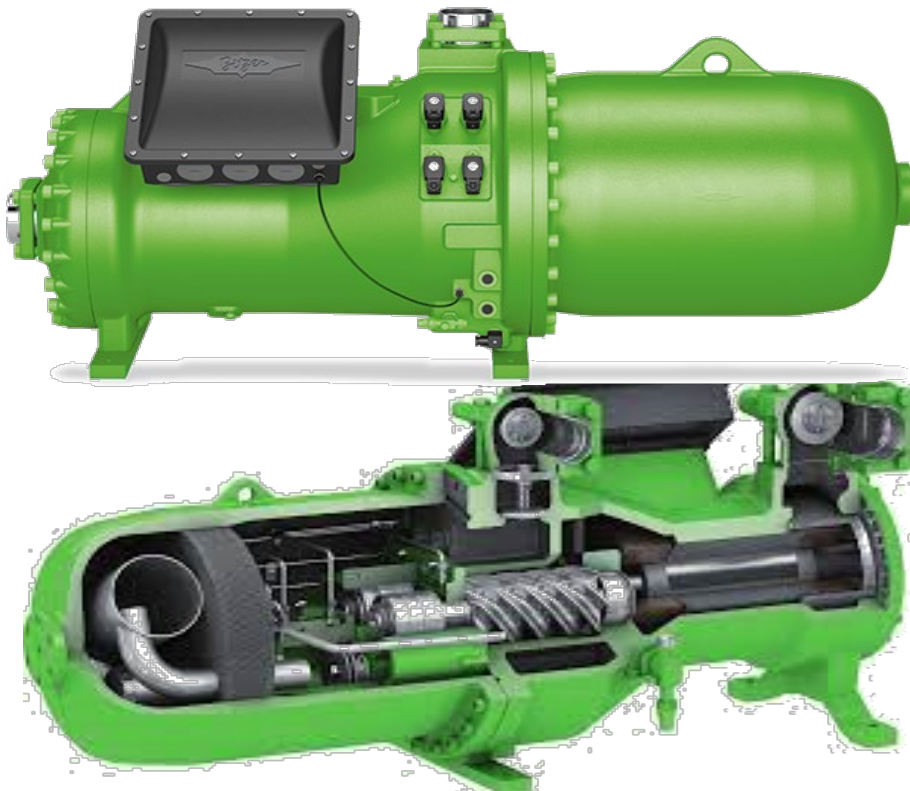
- Optimized energy efficiency both at full and part load conditions
- Low operating sound levels are achieved by the latest compressor and fan design
- Stepped and Stepless screw compressor with a professional control system to minimize energy consumption and optimize the unit performance.
- Compact design for minimized installation space and small footprint
- One, two, three, or four truly independent refrigerant circuits for outstanding reliability
- Using microchannel technology for condensers with higher corrosion resistance and longer life and 30% refrigerant charge compared to traditional solutions.
- Structure and base in hot-dip galvanized steel with electrostatic



STANDARD SPECIFICATIONS

SEMI-HERMETIC SCREW COMPRESSOR

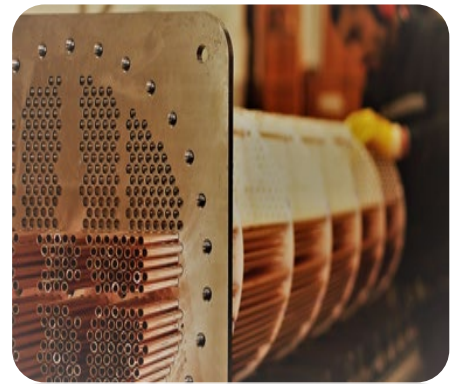
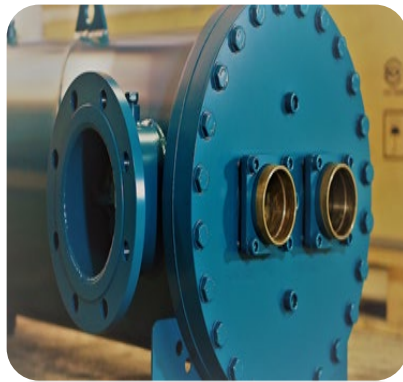
Each compressor features mechanical capacity control, enabling excellent efficiency and seamless system integration. Screw compressors are equipped with a solenoid valve for stepped or step-less capacity control, as well as suction and discharge shut-off valves, an oil sight glass, a check valve in the discharge gas outlet, and an oil fill/drain service valve. They are directly flanged on a three-stage oil separator and have robust axial bearings configured in tandem. Additionally, they are equipped with an internal pressure relief valve for burst protection and a manual lock-out electronic protection system that includes controls for thermal motor winding temperature, phase reversal, and discharge gas temperature protection.



STANDARD SPECIFICATIONS

SHELL AND TUBE LIQUID COOLER

The evaporator is designed as a high-efficiency DX shell & tube heat exchanger, with inner grooved copper tubes that are roller-expanded into the tube sheet. The evaporators undergo testing with a refrigerant side pressure of 30 bars and a water side pressure of 10 bars. A helium leak test is a standard procedure conducted on the evaporators. A guarantee is provided against coolant leaks of up to 2 gr/year. Tests are performed at various pressure levels for multi-circuit evaporators, ensuring prevention of leakage between circuits. The water connections utilize grooved pipes. Each shell of the evaporator includes a vent, a drain, and fittings for temperature control sensors, and is insulated with 3/4 inch equal insulation. To prevent freezing at ambient temperatures as low as -29°C , the evaporator is equipped with evaporator heaters that are controlled by a thermostat.



STANDARD SPECIFICATIONS

SHELL AND TUBE LIQUID COOLER

The water connections utilize grooved pipes. Each shell of the evaporator includes a vent, a drain, and fittings for temperature control sensors, and is insulated with 3/4 inch equal insulation. To prevent freezing at ambient temperatures as low as -29°C , the evaporator is equipped with evaporator heaters that are controlled by a thermostat



STANDARD SPECIFICATIONS

CONDENSERS SHELL AND TUBE

Shell and tube Condensers are used in industrial and comfort cooling units. Shell and tube Condensers are designed to minimize performance-decreasing factors such as vibration and corrosion.

Materials used in shell&tube type condenser:

- a) Heat transfer pipes with special geometry and inside and outside grooves enabling the heat transfer are made of copper
- b) Tube sheets and bodies are made of steel
- c) Head Covers are made of cast iron
- d) Bolts are made of steel alloy
- e) Gaskets are made of asbestos-free materials that are compatible with HCFC and HCF cooling gases.

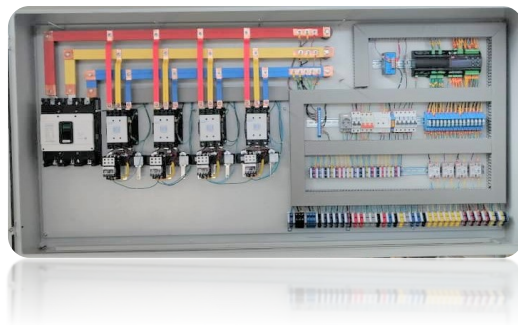


STANDARD SPECIFICATIONS

CONTROL PANEL

The control panel of the chillers is equipped with a state-of-the-art controller that is specifically designed to promote energy savings and maximize unit efficiency. It offers a range of functions, including:

- ✓ Monitoring various operating parameters such as water inlet and outlet temperatures, suction and discharge temperatures, and suction and discharge pressures.
- ✓ Protecting the system from frosting water
- ✓ Stepped or step-less capacity control to adjust the cooling capacity based on the demand.
- ✓ Control over the start and stop of the fans based on pressure conditions.
- ✓ Fan speed adjustment through an inverter, providing flexibility to match the required airflow.



- ✓ Connectivity to a Building Management System (BMS) using the MODBUS protocol, allowing for centralized monitoring and control.
- ✓ Maintaining a log of all faults and alarms in the system's history for troubleshooting and maintenance purposes.
- ✓ Compressor hour equalization to ensure balanced usage and prolong the lifespan of the compressors.

Overall, the control panel offers comprehensive control and monitoring capabilities, enabling efficient operation and effective management of the chiller system.

STANDARD SPECIFICATIONS

REFRIGERATION PIPELINE

- INDEPENDENT REFRIGERATION CIRCUIT PER COMPRESSOR
- ELECTRONIC EXPANSION VALVE: Used to regulate the refrigerant flow to the evaporator maintain a constant superheat and provide the capacity required.
- LIQUID LINE REPLACEABLE CORE TYPE FILTER DRIER: Refrigerant circuits are kept free of harmful moisture, sludge, acids, and oil-contaminating particles by the filter drier.



- LIQUID LINE MOISTURE INDICATOR SIGHT GLASS: Installed in the liquid line. An easy-to-read color indicator shows moisture contents and allows checking the system refrigerant charge.
- LIQUID, DISCHARGE, AND SUCTION LINES SHUT OFF THE VALVE
- DISCHARGE, SUCTION, AND LIQUID LINE PIPES: All pipelines are sized to minimize pressure drop and keep proper velocity ensuring oil return.
- LIQUID INJECTION KIT: For cooling the compressor at high discharge temperature.

STANDARD SPECIFICATIONS

REFRIGERATION PIPELINE

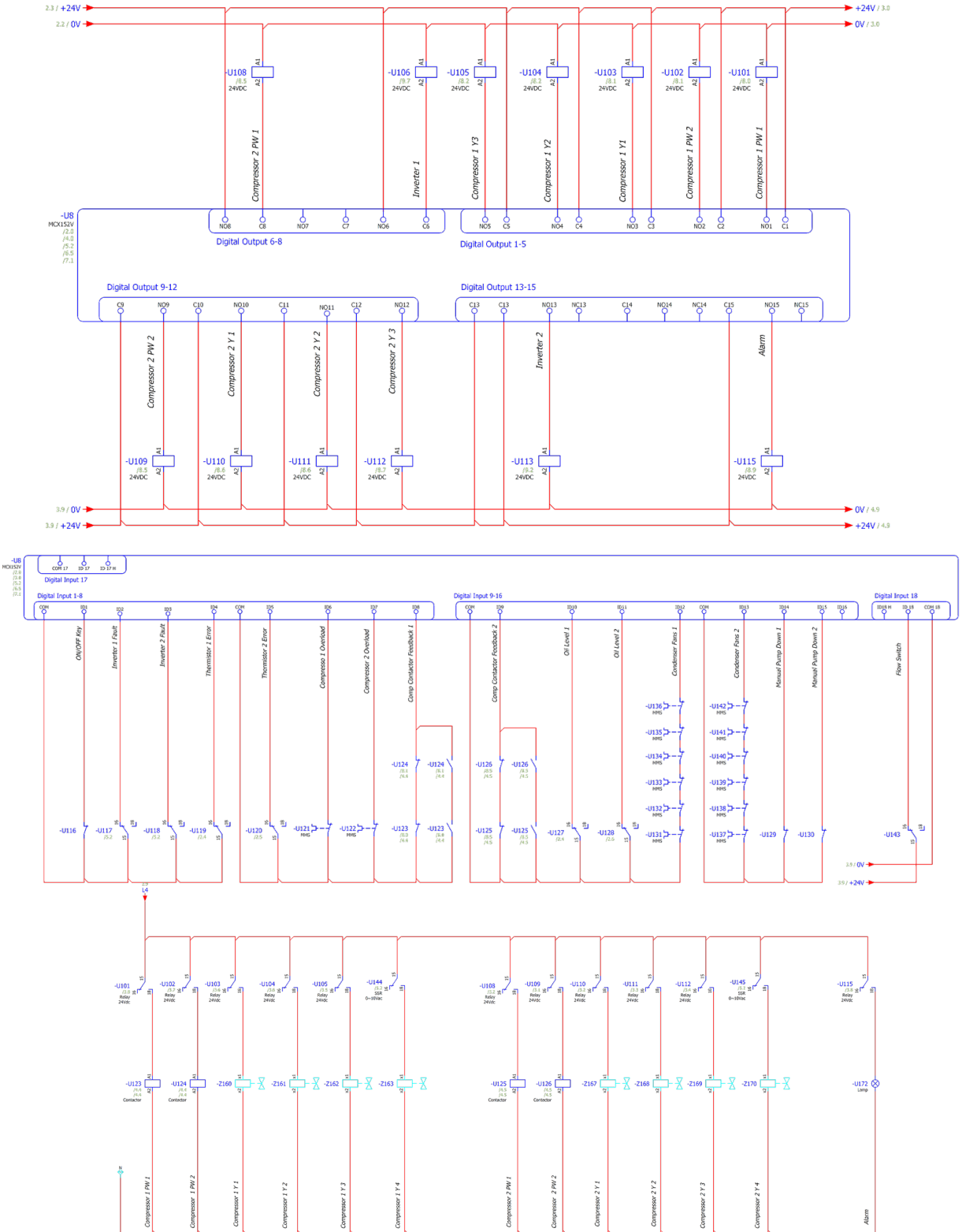
- COMPRESSOR PART WINDING START
- COMPRESSOR IN-BUILT PROTECTION DEVICE
- STARTER: The starter is operated by the control circuit and provides power to the compressor motors. These devices are rated to handle safely both RLA and LRA of motors.
- CRANKCASE HEATERS: Each compressor has an immersion-type crankcase heater. The compressor crankcase heater is always on when the compressors are de-energized. This protects the system against refrigerant Migration, oil dilution, and potential compressor failure.
- HIGH PRESSURE SWITCH: This switch provides additional safety protection in case of excessive discharge pressure.
 LOW-PRESSURE SWITCH: This switch provides additional safety protection in case of very low suction pressure to avoid water freezing.
- UNIT ON-OFF SWITCH: An On-Off Switch is provided for manually switching the unit control circuit.
- INDICATOR LIGHTS: LED lights indicate power ON to the units, MENU adjustment, and FAULT indications due to trip on safety devices.
- UNDER VOLTAGE AND PHASE PROTECTION: This feature protects the chiller against low incoming voltage as well as single phasing, phase reversal, and phase imbalance by de-energizing the control circuit.
- FAN MOTOR CIRCUIT BREAKER: For each pair of condenser fan motors.
- COMPRESSOR CIRCUIT BREAKERS: Protects compressor against overload and short circuit. When tripped, the breaker opens the power supply to the compressor and controls the circuit through auxiliary contacts. These circuit breakers are provided with a thermal adjustable switch for precise overload settings.
- EXTERNAL OVERLOAD RELAY FOR EACH COMPRESSOR
- CONTROL FUSED FOR SHORT CIRCUIT PROTECTION

OPTIONAL FEATURES

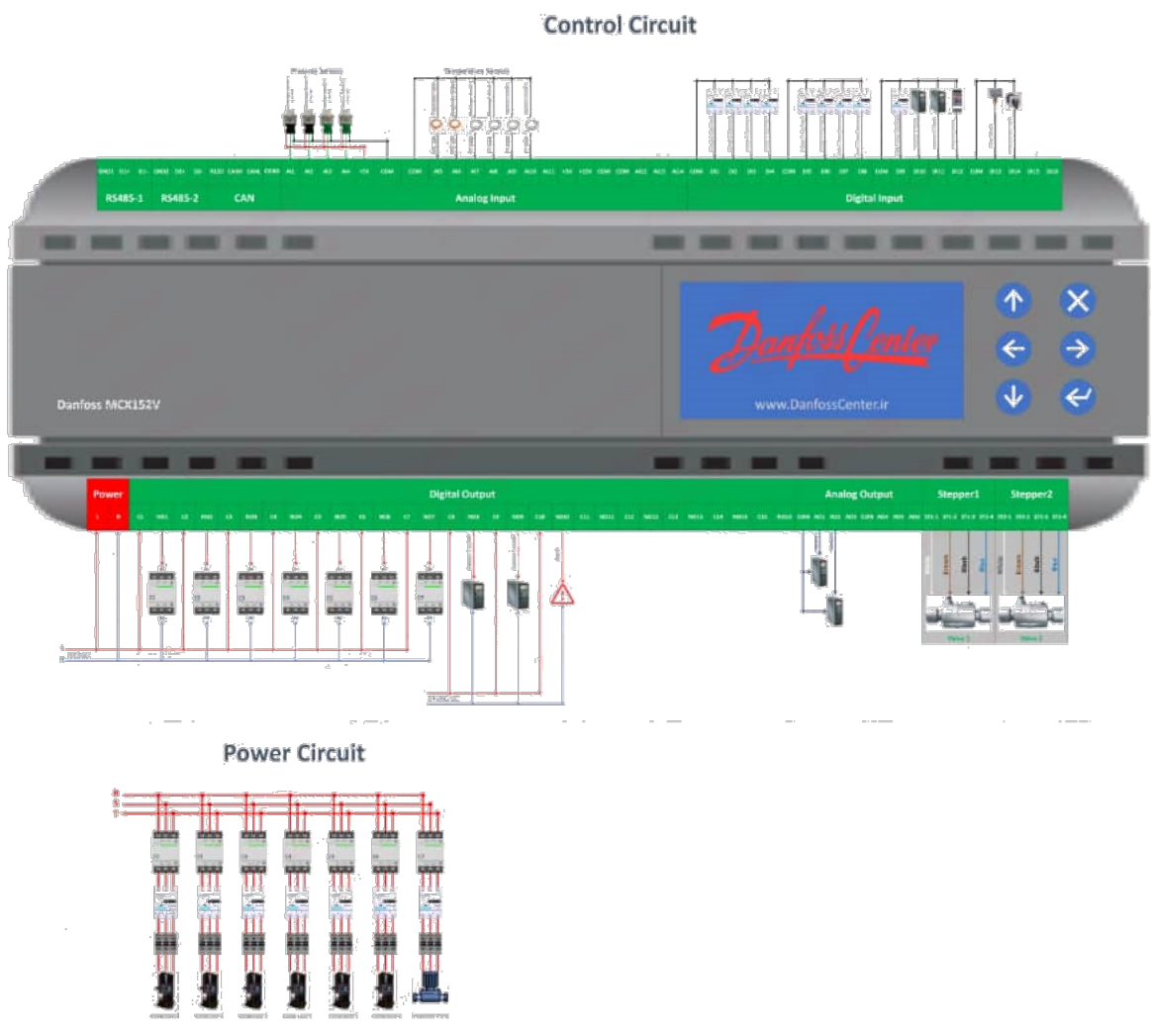


- ✓ WATER FLOW SWITCH: Paddle type field adjustable flow switch for water cooler circuits, Interlock into safety circuits so that the unit will remain off unit water flow is determined.
- ✓ UNIT MOUNTING SPRING ISOLATORS: These housed spring assemblies have a neoprene friction pad on the bottom to prevent vibration transmission.
- ✓ COMPRESSOR SILENCER BOX: reduces the compressor operating noise and keeps the compressor clean.
- ✓ COPPER FINS/TUBES CONDENSER COILS: For seashore salty corrosive environments.
- ✓ PRE-COATED ALUMINUM FINS CONDENSER COILS (MHG): For seashore or acid-corrosive environments.
- ✓ BUILDING MANAGEMENT SYSTEM (BMS): MODBUS, BACNET, and CANBUS protocol
- ✓ NON-FUSED MAIN DISCONNECT SWITCHES: De-energize power supply during servicing/repair works as well as with door interlock.
- ✓ EVAORATOR HEATER TAPE: Prevent freezing up of water on low ambient.
- ✓ GROUND CURRENT PROTECTION: Additional protection for the compressor in the case of abnormal current leakage.

Typical electrical wiring diagram



TYPICAL WIRING DIAGRAM





. NOTE .

A large rectangular area with rounded corners, outlined in light blue, containing numerous horizontal light blue lines for writing. The lines are evenly spaced and cover the majority of the page below the header.

ECO COOLER
AIR CONDITIONER

Ataturk District, Ertugrul Gazi Street. Metripol, A Blok Apartment,
27th Floor, No: 2, E/397 Ataşehir, ISTANBUL, **TURKEY**

Tel Fax: (+90)2167711721
Web: www.ecocooler.com.tr

Mob: (+90)530 946 17 90
Email: info@ecocooler.com.tr