



Key Features & Capabilities

- Comprehensive experimental capability on **temperature, pressure, defrosting, and auto-control** of heat pump devices and gas furnace systems.
- Supports practical and theoretical training in **automatic control, refrigeration systems, and related accessories.**
- Includes fault diagnosis systems with configuration testing and safety protocols.
- Operable manually via control switches on the machine unit, independent of the control system.
- Integrated **mechanical and graphical modules** housed in a unified body for intuitive learning.
- Wiring and jack-based operational circuit supports hands-on operation and testing.
- Front-facing vertical layout for mechanical components allows optimal access and visibility.

Control & Automation Features

- **Computer-controlled system** with Ethernet communication for full monitoring and operation.
- Optional monitoring and control through **tablet-based application.**
- Condenser fan motor can be **automatically controlled via pressure and temperature settings.**
- Overload protection and system cut-off in the event of abnormal temperature, pressure, or freezing.
- Audible and visual **alarm output for system anomalies**, visible through the connected computer interface.
- Real-time **data output, auto-save, and P-I diagram drawing.**

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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- Capability for **fault diagnosis**, animated operational diagrams, and Mollier diagram graphing with comparison features.
- **ON/OFF control** and condition-based logic settings via software.

Mechanical Specifications

Compressor

- Minimum 1/2 HP, Single Phase, 220V
- Type: Reciprocating
- Refrigerant: R-134a
- Includes: Control Box

Heat Exchangers

- **Heat Exchanger 1:** 1/2 HP, Single Phase, 220V, Air-cooled
 - Fan Motor: 9W, 1 unit included
- **Heat Exchanger 2:** Acrylic round water tank (250mm Ø) with copper tube configuration

Pumps & Valves

- All associated pumps and valves included
- **Receiver & Liquid Separator:** Minimum 1/2 HP, Vertical type
- **Solenoid Valve:** 3/8", 220V, 50–60Hz, direct acting (nut-fastening/welded)
- **Filter Dryer, Sight Glass:** 3/8", nut-fastening or welded
- **Expansion Valves (x2):** 3/8" and 1/2", nut-fastening or welded
- **Refrigerant:** R-134a
- **Charging Nipple:** 1/4"
- **Check Valves (x2):** 3/8", nut-fastening or welded
- **4-Way Valve:** 1/2"–3/8"

Pressure Gauges

- High Pressure: 35 bar
- Low Pressure: 15 bar
- Refrigerant: R-134a
- Dial Size: 68 mm

Automatic Controls & Electrical Components

- **Relay:** 3 units, Min. 8-pin

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- **NFB:** 15A, 220V/5kA
- **Magnetic Switch:** 9A, DC 24V
- **Thermal Relay:** 9–12A
- **Wattmeter:** Digital type
- **Indicator Lamps:** Red, Green, Yellow, White
- **Digital Pressure Sensors:**
 - Low: 1.5 MPa
 - High: 3.3 MPa
- **Switches & Controls:**
 - Select Switch: 1a, 1b
 - Toggle Switch: 1a, 1b
 - Push Buttons: 1a, 1b
 - Timer: 60 sec, DC 24V, 8-pin
- **Digital Thermometers:** 7 units
- **Buzzer:** DC 24V

Data & Control Interface

Control Module

- **Removable Microcontroller (Replaceable)**
- **Sensor Interface:** 16 Channels
 - Options: Temperature, Pressure, Flowmeter, Air Flowmeter, Ampere
- **Power Relay:** 16-channel ON/OFF control
- **Communication Ports:**
 - Ethernet RJ-45 (10/100)
 - Optional: Wi-Fi, Bluetooth, Zigbee, USB, RS-232, RS-485, RS-422, CAN

Software Features

- **Network Control:** Ethernet-based real-time system control
- **Sensor Data Integration:** Visual representation of sensor values on mechanical and Mollier diagrams
- **Data Management:** Save/export sensor graphs and reports; print capability
- **Animation:** Real-time motion display of mechanical parts
- **Diagnostic Simulation:** Compare measured and simulated sensor values for analysis

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