



### General System Capabilities

- Suitable for practical training in refrigeration cycle principles including temperature, pressure, defrosting, automatic control, and fault diagnostics.
- Clear visual differentiation of high- and low-pressure lines; each mechanical component is equipped with temperature monitoring for analysis against refrigeration cycle changes.
- Integrated mechanical and graphical modules housed in a unified structure.
- Operable independently of the control unit using manual control switches.
- Wiring and jack-type operational circuit allowing hands-on practice and testing.
- Components are vertically arranged for optimal visualization and interaction.
- Real-time monitoring and control via Ethernet-enabled PC interface; supports remote operation and condition-based programming.
- Equipped with safety features such as overload cut-off, pressure switches, and automatic fault detection with alarm output.

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



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### Data & Diagnostic Capabilities

- Automatic data logging and P-I diagram generation.
- Full fault diagnosis capabilities with visual and alarm notifications.
- Data output and monitoring with capability to simulate and compare readings on Mollier diagrams.
- ON/OFF control and sensor monitoring via PC software.
- Supports data visualization, graphing, file saving, and printing.

### Mechanical Specifications

#### Compressor Unit

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

#### Condenser Unit

- Power: 1/2 HP, Single Phase, 220V
- Type: Air-Cooled
- Fan Motor: 9W (1 unit included)
- Transparent pipe for phase change visualization with holder

#### Evaporator Unit

- Power: 1/3 HP, Single Phase, 220V
- Type: Air-Cooled
- Fan Motor: 9W (1 unit included)
- Transparent pipe for phase change visualization with holder

#### Auxiliary Components

- **Receiver & Liquid Separator:** 1/2 HP, Transparent design, Pressure-resistant construction
- **Solenoid Valve:** 3/8", 220V, 50~60Hz, HFC-compatible, Direct acting
- **Filter Dryer, Sight Glass, Expansion Valve:** 3/8" or 1/2" nut fastening/welded
- **Charging Nipple:** 1/4"
- **Pressure Gauges:**

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- High Pressure: 35 bar
- Low Pressure: 15 bar
- Type: R-134a, 68 mm Dial
- **Piping:** Transparent for visual phase change monitoring

## Control & Automation

### Electrical Components

- Relay: Min. 8-pin (3 units)
- NFB: 15A, 220V/5kA
- Magnetic Switch: 9A, DC 24V
- Thermal Relay: 9–12A
- Digital Wattmeter
- Indicator Lamps: Red, Green, Yellow, White
- Pressure Sensors (LPS, HPS, DPS): 1.5 MPa & 3.3 MPa
- Toggle & Push Buttons: 1a, 1b
- Timer: 60 sec, DC 24V, 8-pin
- Buzzer: DC 24V
- Digital Thermometers: 7 units
- Select Switch: 1a1b

### Graphic & Interface Modules

- **Graphic Module:** Min. 800 x 600 mm, Aluminum
- **Auto Module:** Min. 1000 x 600 mm, Aluminum
- **Control Board:** Refrigeration Trainer Control Board
- **Microcontroller:** Removable type
- **Sensor Interface:** 16-Channel for Temp., Pressure, Flow, etc.
- **Power Relay Control:** 16-Channel
- **Connectivity:** Ethernet RJ-45 (Optional: Wi-Fi, Bluetooth, Zigbee, USB, RS-232/422/485, CAN)

### Software Capabilities

- Network control via Ethernet.
- Manual and automated control of mechanical components.
- Real-time sensor data monitoring, display, and export.
- Visual representation with animation of mechanical system status.

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- Sensor data graphing on Mollier diagrams with save and print capabilities.



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