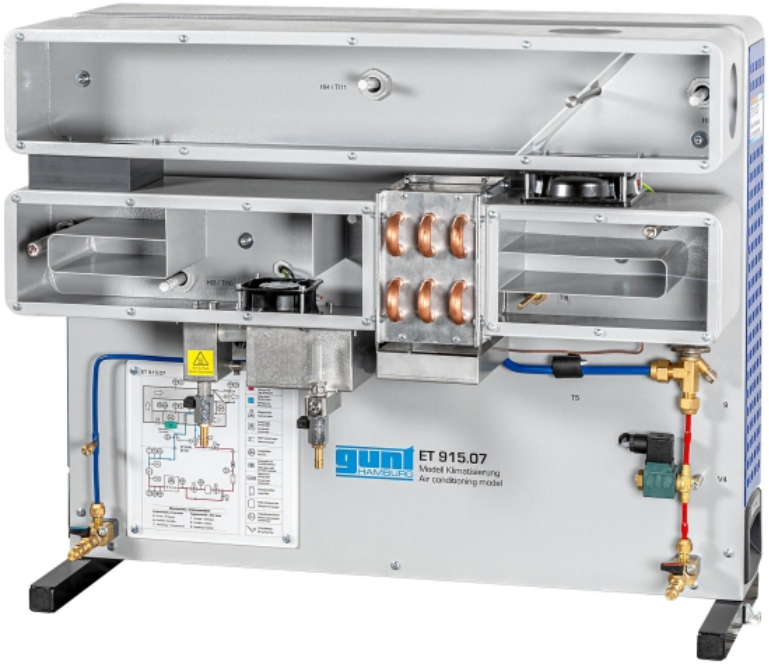
ET 915.07
Air conditioning model



Description

- **complete model of a full air conditioning system**
- **heating, cooling, humidifying and dehumidifying**
- **outer air and recirculation operation possible**
- **component operation and fault simulation via the GUNT software**

ET 915.07 is part of the HSI training system for refrigeration and air conditioning technology. In combination with the base unit ET 915 the operational model of a full air conditioning system is created. The model is plugged onto the base unit, secured using fasteners and connected with refrigerant hoses to become a complete refrigeration circuit for the air cooler.

The room climate is created by the interaction of air temperature, heating temperature and air humidity. The purpose of room air conditioning is to shape the room climate in accordance with the requirements of people or sensitive goods. This model introduces the operation of an air conditioning system and the recirculating air and outer air operating modes.

The model ET 915.07 includes two air ducts with transparent front. The top air duct serves as climatic chamber whilst the bottom air duct contains the air cooler, two electric air heaters and a steam humidifier. A fan between the two air ducts recirculates the air. A motorised butterfly valve in the top air duct allows a change between outer air and recirculating operation. Dependent on the switching of the two air heaters, the air cooler and the humidifier, the air in the duct system can be cooled, heated, humidified or dehumidified.

The individual system components are operated via the GUNT software. Temperature and humidity before and after the evaporator and in the climatic chamber are recorded by sensors, digitised and represented dynamically in the software. The conditioning of the air can be monitored online in the h-x diagram.

Fundamentals and individual components are represented in the educational software for ET 915.07. Performance assessments check the learning progress. With the aid of the authoring system further exercises and performance assessments can be created.

Learning objectives/experiments

- full air conditioning system and its main components
- heating and cooling in the h-x diagram
- humidifying and dehumidifying in the h-x diagram
- outer air and recirculating operation
- fault simulation

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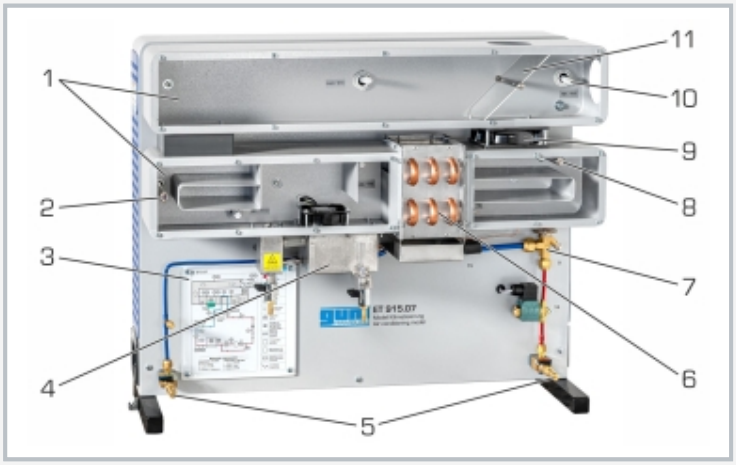
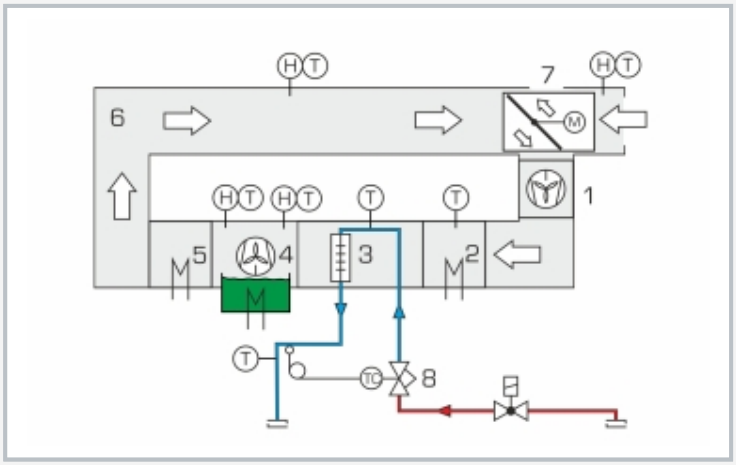
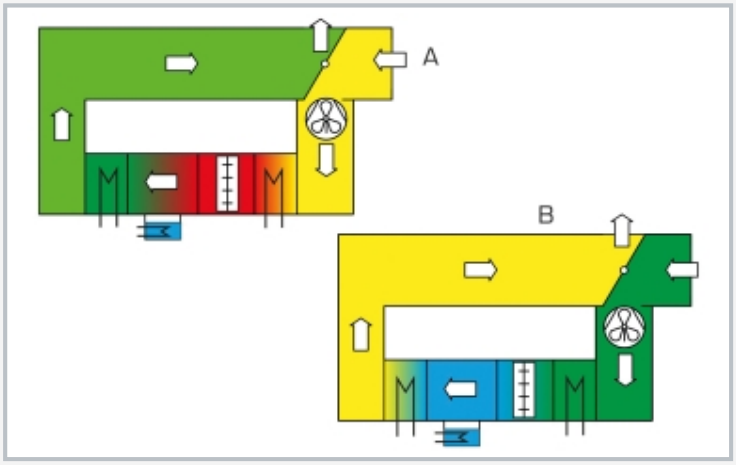


1 air duct, 2 air reheater, 3 process schematic, 4 air humidifier, 5 connections for ET 915, 6 evaporator as air cooler, 7 expansion valve, 8 air preheater, 9 fan, 10 sensors for humidity and temperature, 11 ventilation flap



Air conditioning with recirculating operation:
1 fan, 2 air preheater, 3 air cooler, 4 air humidifier, 5 air reheater, 6 air duct, 7 ventilation flap with servomotor, 8 expansion valve; T temperature, P pressure, H humidity; red arrow: hot, blue arrow: cold; blue: low pressure, red: high pressure



Air conditioning with outer air operation; A: humidification, B: dehumidification; yellow: dry, green: humid, blue: cooling, red: heating

Specification

[1] model of an air conditioning system to plug onto the base unit ET 915
[2] GUNT training system with HSI technology
[3] air duct with transparent front and adjustable ventilation flap for recirculating or outer air operation
[4] evaporator as air cooler
[5] 2 heaters as air preheater and reheater
[6] air humidifier with float switch, fan, filling level indication
[7] thermostatic expansion valve as expansion element
[8] sensor to record temperature and combined sensor for humidity and temperature
[9] operation of individual components and of the system and fault simulation via software
[10] GUNT software with control functions and data acquisition via USB under Windows 11
[11] GUNT software: educational software, data acquisition, system operation

Technical data

Air duct, top: 136x136x800mm

Evaporator as air cooler
- transfer area: approx. 900cm^2

Air heater:
- 2x 250W

Axial fan
- max. power consumption: 20W
- max. flow rate: 160m^3/h

Humidifier
- heater: 200W

Measuring ranges
- temperature: 2x -50...50°C, 5x 0...50°C
- rel. humidity: 4x 10...100%

LxWxH: 850x400x680mm
Weight: approx. 51kg

Scope of delivery

1 air conditioning system model, filled with refrigerant
1 narrow mouth bottle
1 GUNT software + USB cable

ET 915.07
Air conditioning model

Required accessories

ET 915	HSI training system refrigeration and air conditioning technology, base unit

Optional accessories

for Remote Learning

GU 100	Web Access Box
with	
ET 91507W	Web Access Software