

ET 915.06

Model of a simple air conditioning system



Description

- **model of a simple air conditioning system for room cooling**
- **component operation and fault simulation via the GUNT software**

ET 915.06 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 simple 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.

In systems for room cooling the air to be cooled is aspirated from the room by a fan, cooled and fed back into the room. This model demonstrates the principles of room cooling and the components of an air conditioning system.

The model ET 915.06 includes an air duct with transparent front, fan for air transport, an evaporator as air cooler and an expansion valve. All components are clearly arranged on a panel.

The individual components of the system, here the compressor and the fan, are operated via the software. The software offers the option to simulate faults.

The volumetric air flow rate is determined via a differential pressure measurement. Temperatures and humidity before and after the evaporator are recorded by sensors, digitised and dynamically represented in the software.

Fundamentals and individual components are represented in the educational software for ET 915.06. Performance assessments check the learning progress. With the aid of the authoring system further exercises and performance assessments can be created.

Learning objectives/experiments

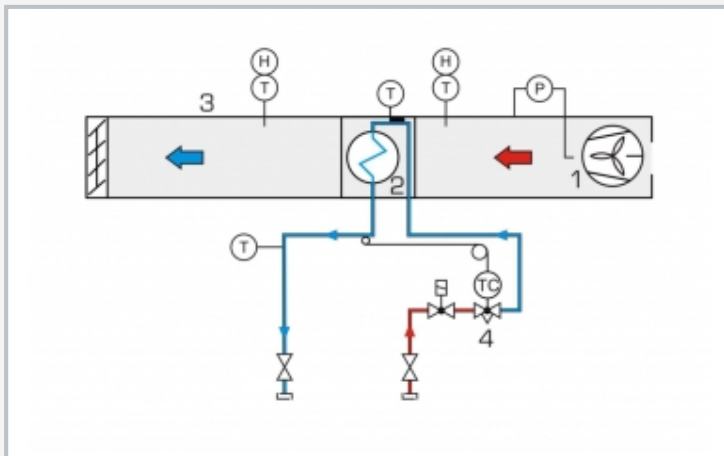
- air conditioning system for room cooling and its main components
- principle of operation of an evaporator as air cooler
- fault simulation

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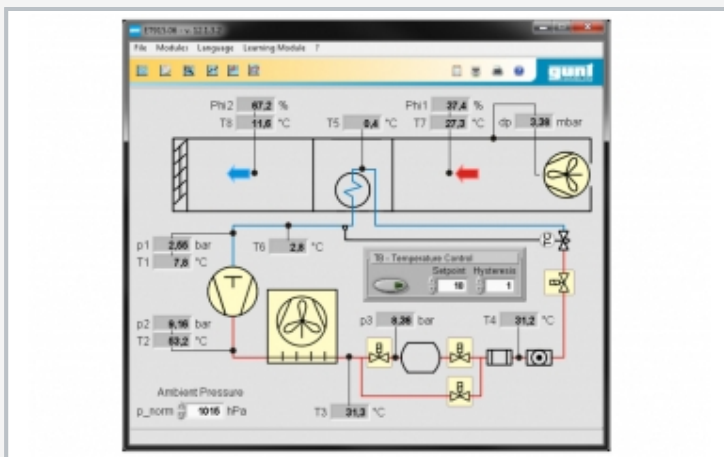
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1 evaporator as air cooler, 2 air duct, 3 temperature and humidity sensor, 4 process schematic, 5 connections for ET 915, 6 solenoid valve, 7 expansion valve, 8 radial fan, 9 differential pressure sensor



Process schematic of the simple air conditioning system model: 1 radial fan, 2 air cooler, 3 air duct, 4 expansion valve; T temperature, P pressure, H humidity; red arrow: hot, blue arrow: cold; blue: low pressure, red: high pressure



Software screenshot: process schematic

Specification

- [1] model of a simple air conditioning system to plug onto the base unit ET 915
- [2] GUNT training system with HSI technology
- [3] air duct with transparent front
- [4] evaporator as air cooler
- [5] radial fan with throttle valve
- [6] thermostatic expansion valve as expansion element
- [7] sensors to record temperature, humidity and differential pressure for determining the volumetric air flow rate
- [8] operation of individual components and of the system and fault simulation via software
- [9] GUNT software with control functions and data acquisition via USB under Windows 7, 8.1, 10
- [10] GUNT software: educational software, data acquisition, system operation

Technical data

Air duct: 136x136x435mm
 Evaporator as air cooler
 ■ transfer area: approx. 900cm²

Radial fan
 ■ max. power consumption: 80W
 ■ max. flow rate: 255m³/h

Measuring ranges
 ■ temperature: 2x ±50°C, 2x 0...100°C
 ■ differential pressure: 0...10mbar
 ■ humidity: 2x 10...100% rel.

LxWxH: 970x370x600mm
 Weight: approx. 35kg

Scope of delivery

- 1 model of a simple air conditioning system, filled with refrigerant
- 1 GUNT software CD + USB cable

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Required accessories

061.91500 ET 915 HSI training system refrigeration and air conditioning technology, base unit