Features

- Design and wiring of typical electrical circuits from refrigeration1
- Investigation of important electrical components from refrigeration1
- Design and investigation of a safety chain

The wiring of electrical components is a typical task in the field of refrigeration. Besides the design and operation of the individual components, knowledge about the interaction of the components in circuits is an important learning objective. Safety aspects also play an important role. With Tesca Electrical Installation in Refrigeration System 32431 this knowledge and these skills can be acquired.
The electrical components are arranged clearly visible. All components are connected on terminal blocks. Using the cables included in the scope of delivery it is possible to set-up different circuits correctly and operationally.
Lamps simulate the consumers. All components are operated and tested with mains voltage to provide high relevance for practice.
There are electrical components for the start and operation of refrigerant compressors, such as e.g. electromagnetic start-up relay and capacitor. With a timer, circuits can be designed and examined for cyclical defrosting in refrigeration systems. This also includes the correct programming of the timer. Typical safety components, such as pressure switches, thermostats and circuit breakers are also included in the scope of delivery. These components enable the design and examination of a typical safety chain for refrigeration.
The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Specifications

- Experimental unit from the Sci-tech practical series for the training of mechatronics engineers for refrigeration
- Design and investigation of circuits with electrical components from refrigeration
- Electrical components mounted clearly visible and connected on terminal blocks
- 1 set of cables with wire end ferrules for wiring electrical components on terminal blocks
- 3 pressure switches, 2 thermostats, 1 solenoid valve, 1 timer, 4 circuit breakers, 5 contactors, 3 relays, 2

Note: Specifications are subject to change.

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capacitors
- 5 lamps to simulate consumers

Technical Specifications

- 3 pressure switches
  - High pressure: 8...32bar
  - Low pressure: -0,9...7bar
  - Differential pressure: 0,3...4,5bar
- 2 thermostats: -5...20°C
- 1 timer
  - 2 switchable outputs
  - Switching time: 1...60min
- 4 circuit breakers
  - Bimetallic circuit breaker
  - Thermistor circuit breaker
  - Circuit breaker with start-up current limiter
  - Adjustable protection relay
- 5 contactors
  - 2x: 3 NO, 1 NC
  - 3x: 4 NO
- 3 relays
  - Electromagnetic start-up relay
  - PTC start-up relay
  - Time relay
- Start-up and operating capacitor: 15µF, 80µF

Experiments

- Read, understand, wire and test electric circuit diagrams
- Design and operation of electrical components from refrigeration
  - Start-up capacitor
  - Operating capacitor
  - Start-up relay
  - Time relay
  - Timer
  - Circuit breaker
  - Start-up current limiter
  - Contactors
  - Pressure switch
  - Thermostat
  - Solenoid valve
- Design and testing of a safety chain
- Star / delta connection
- Change of direction of rotation in an alternating current circuit
- Safety aspects when handling mains voltage

Requirements

- 380 – 440VV, 50Hz, 3 phase Power Supply

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